

ARCHITECTURE DEPARTMENT

MASTER OF ARCHITECTURE PROGRAMME

CHINESE UNIVERSITY OF HONG KONG

2008-2009

DESIGN REPORT



SPATIAL STRUCTURES AS ALTERNATIVE TO TOWERS

JIN Lu

May 2009

CHINESE UNIVERSITY OF HONG KONG

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SPATIAL STRUCTURES AS ALTERNATIVE TO TOWERS

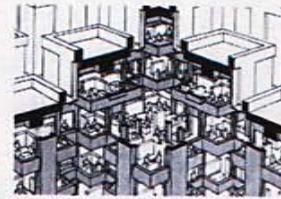
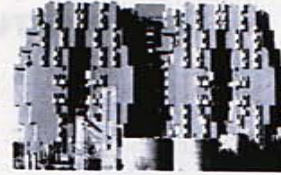
JIN LI May 2008

Thesis Report

Spatial Structures As Alternative to Towers

Jin Lu S07009540 March 2

Advisor Vito Bertin

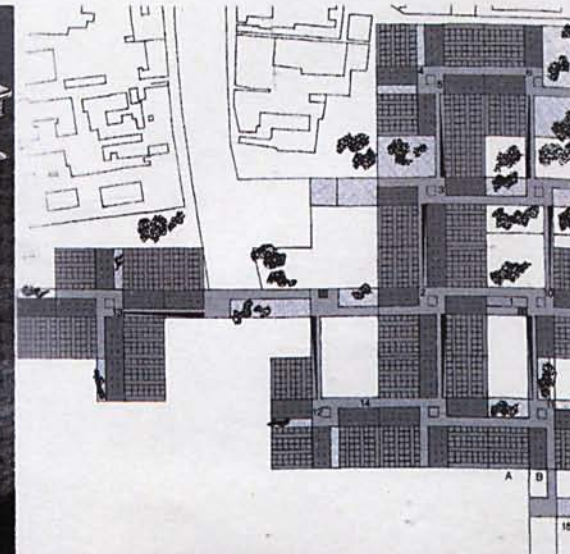
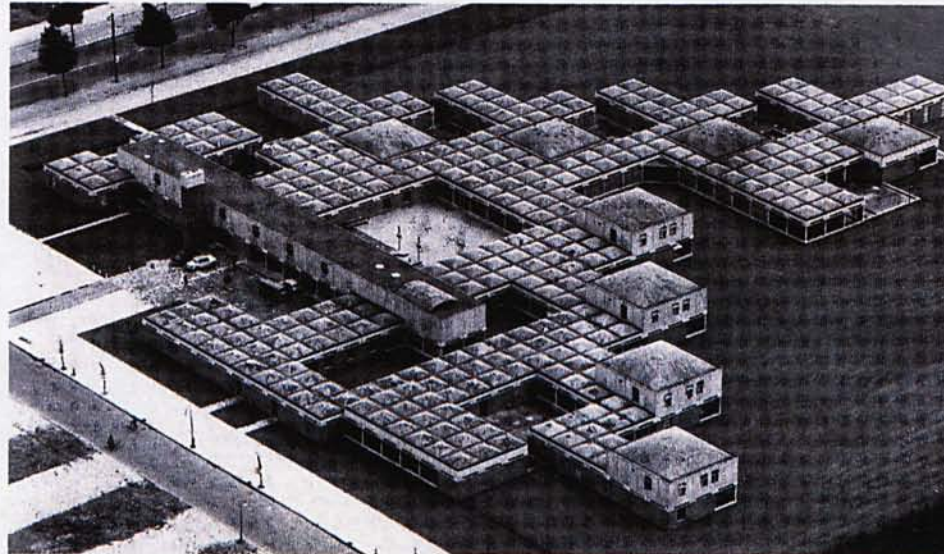


Proposal

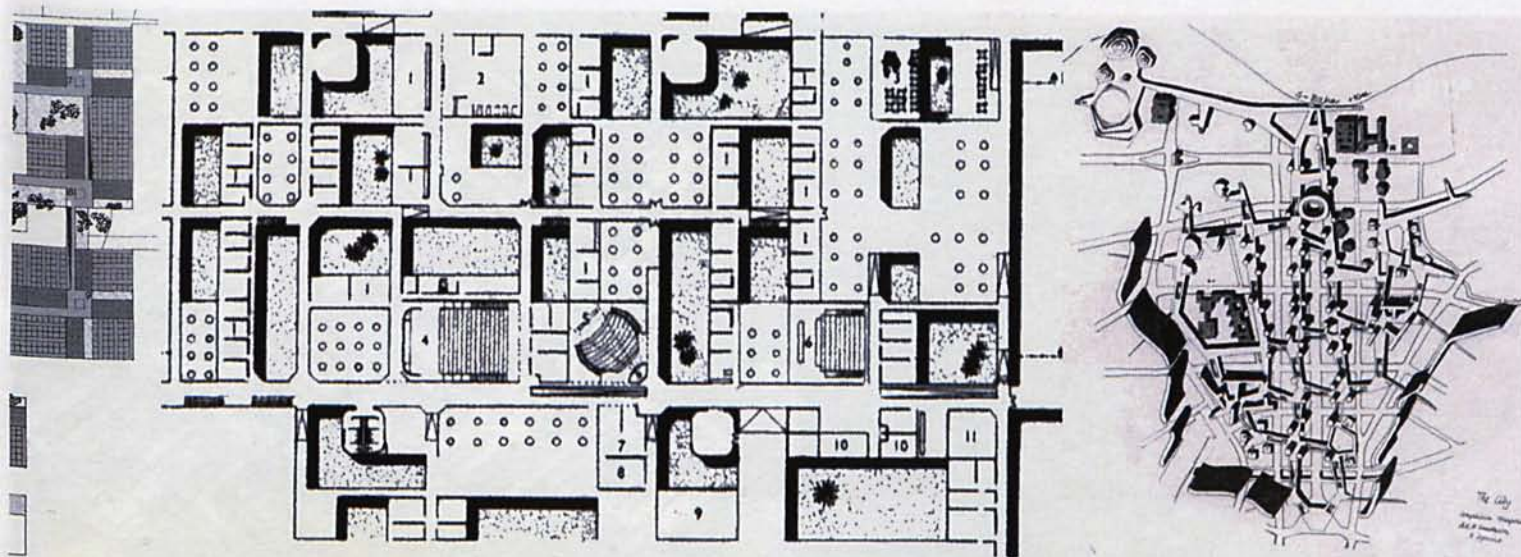


Starting Point - Mat Buildings

I am interested in mat-building, which was first delineated by Alison Smithson in 1974, in her article "How to Recognize and Read Mat-Building". It can be considered as a strategy of spatial organization in architecture, "epitomise the anonymous collective; where the functions come to enrich the fabric, and the individual gains new freedoms of action through a new and shuffled order; based on interconnection, close-knit patterns of association, and possibilities for growth, diminution, and change".

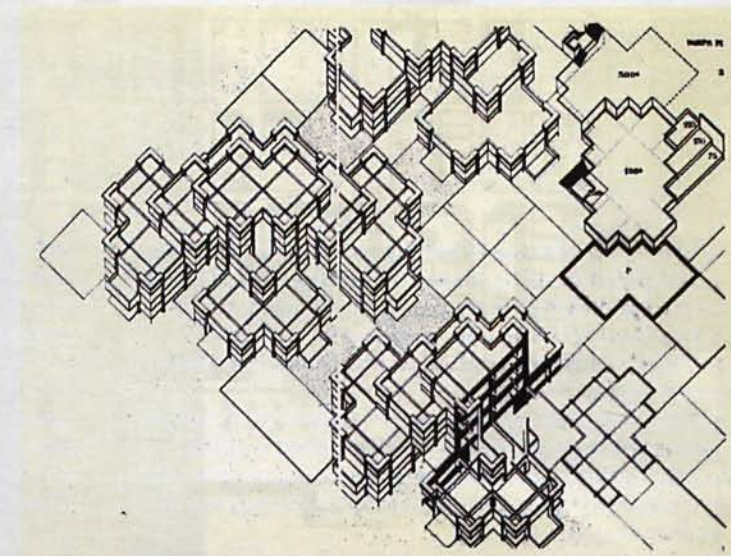
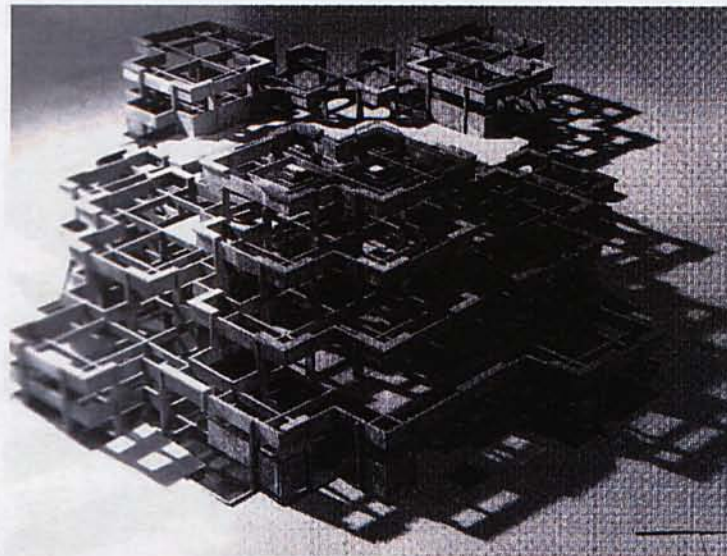


"The way towards mat-building started blindly enough, the first Team 10 review of the field of its thought gradually got further bodied-out in projects, and these in the early seventies began to appear in built-form."



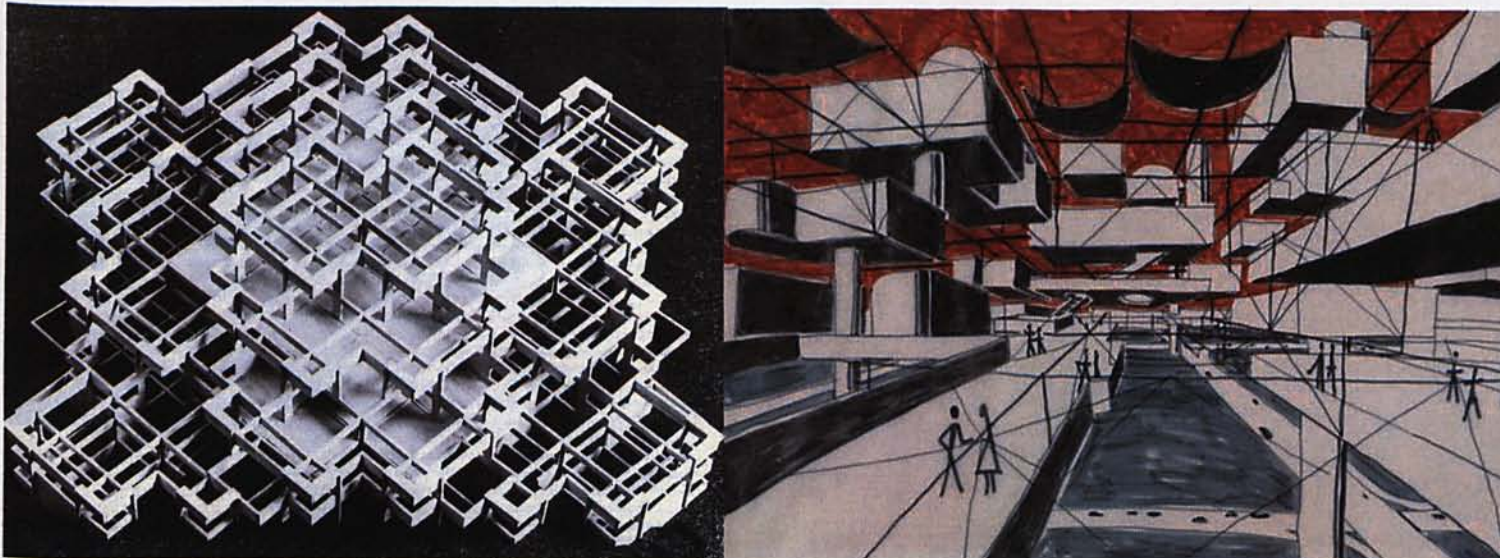
Shift to - Three Dimensional Spatial Structures

I found many examples of mat-building, and most of them have the following characteristics: cover large areas, only few storeys, low density, and developed more in horizontal directions. The mat-building is designed in good spatial organization but not suitable in Hong Kong - a skyscraper city.



And when I studying the mat-building and structuralism, I also found other buildings such as Walden 7 designed by Ricardo Bofill, which have the original spatial characteristics of mat-building -"indeterminacy in size and shape, flexibility in building uses, mixture in program"-but also have some different characteristics, not cover too large areas, high density, and very tall; it can be considered as developed equally in three-dimensional direction, which I called it three dimensional spatial structures.

Walden 7 is a high-density, three-dimensional spatial structure designed by Ricardo Bofill. It is a prime example of the mat-building concept, characterized by its complex, interconnected grid of spaces and its high density.



Issues

Three Dimensional Spatial Structures

I found many examples of mat-building, and most of them have the follow characteristics: cover large areas, low density, and developed more in horizontal directions; which are magical but not suitable in Hong Kong - a skyscraper city. And I also found other buildings such as Walden 7 designed by Ricardo Bofill, which have the original spatial characteristics of mat-building - "indeterminacy in size and shape, flexibility in building uses, mixture in program" - but also have some different characteristics, not cover too large areas, high density, and very tall; it can be considered as developed equally in three-dimensional direction.

Schedule

- 1 Precedent study of buildings and geometry.
- 2 Exploration of the design principle
- 3 Site selection and preparation of individual design
- 4 Develop and test the pre-study on individual design

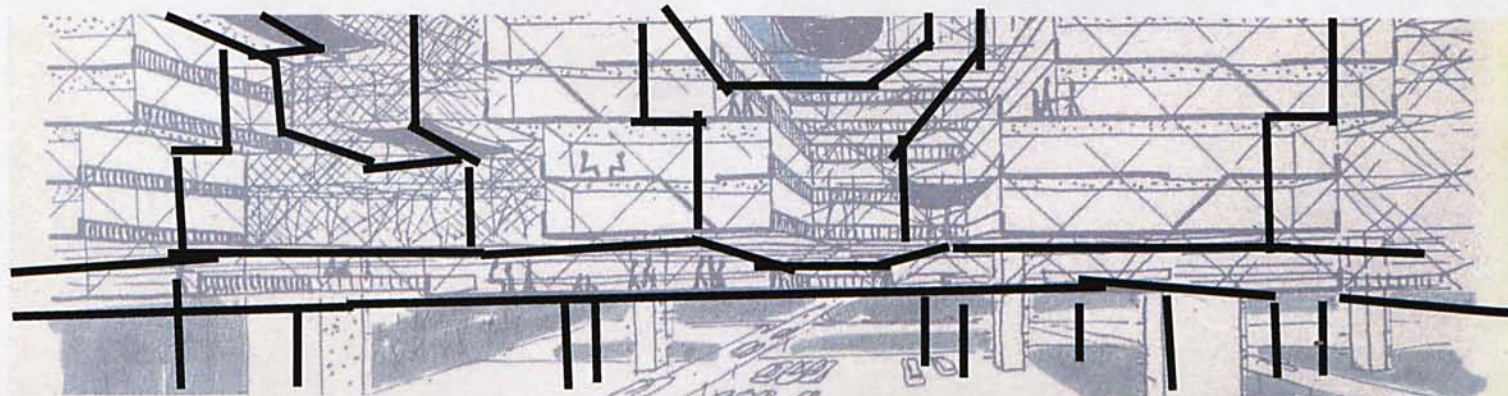
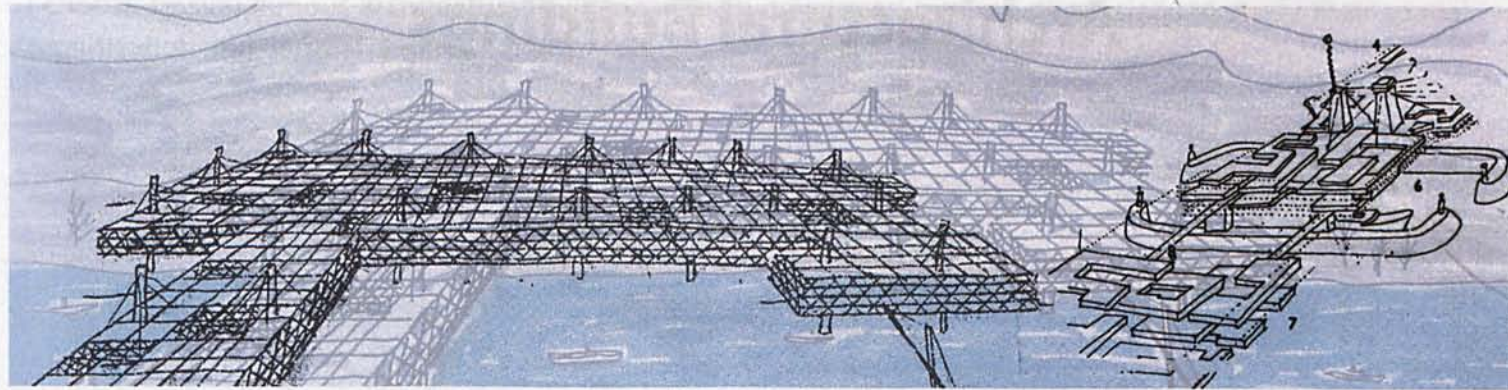
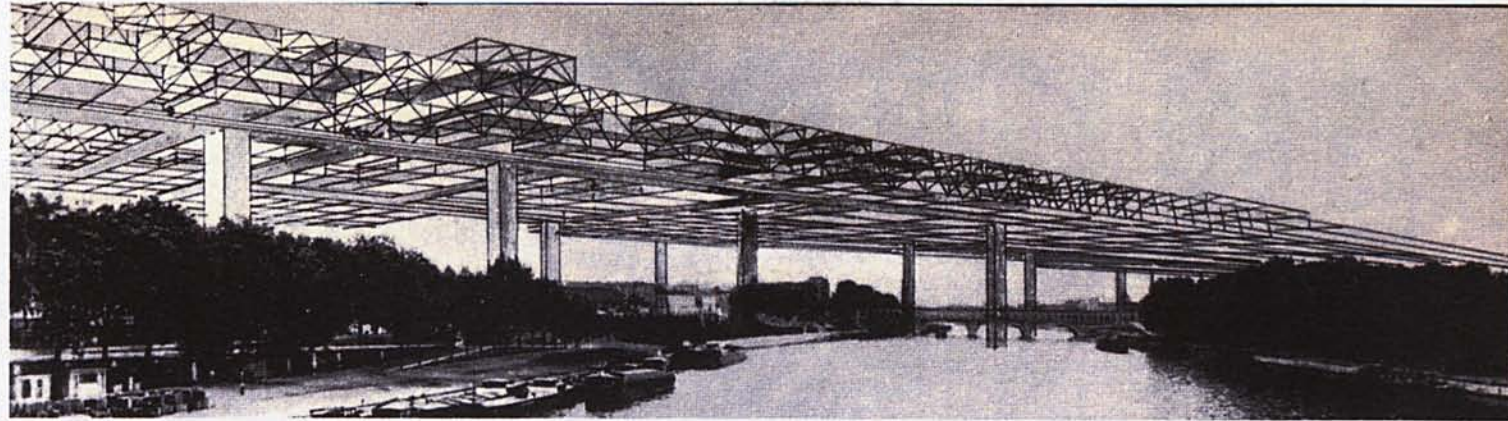
I found many examples of that building, and most of them have the same characteristics: low density, and developed more in horizontal direction, which are the typical features of a skyscraper city. And I also found other buildings, which are not skyscrapers, but they have the original spatial characteristics of that building, "mixture in program", but also have some different characteristics, not very big, high density and very tall, it can be considered as developed equally in three dimensions.

I choose several famous architectural buildings which developed in three dimensions to study their spatial organization and geometry behind them.

Architectural Buildings

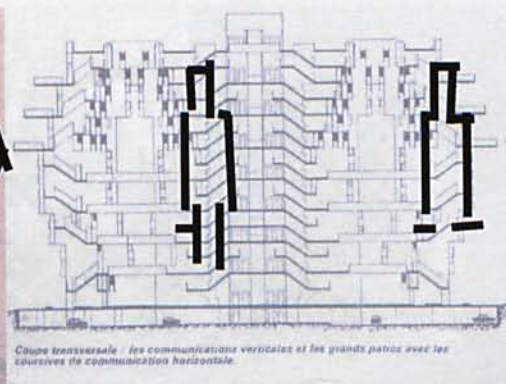
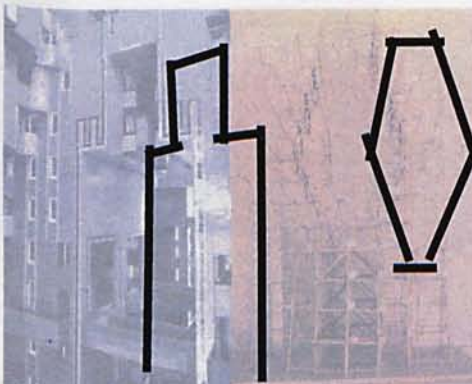
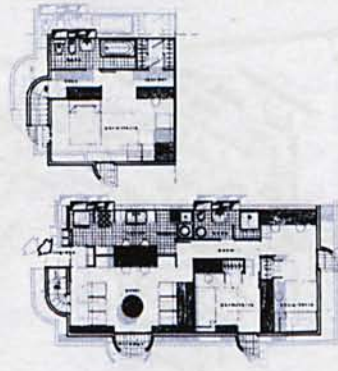
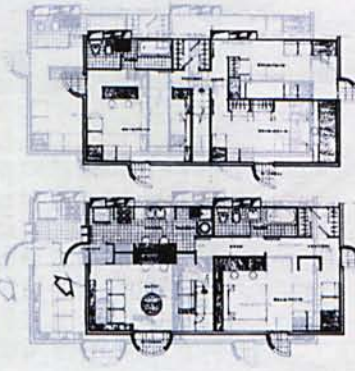
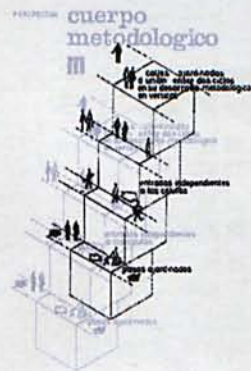
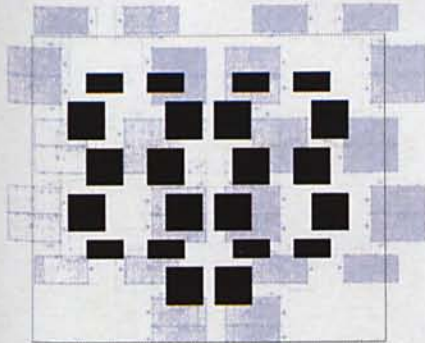
YONA FRIEDMAN

Seven Bridge Town to link Four Continents, 1963



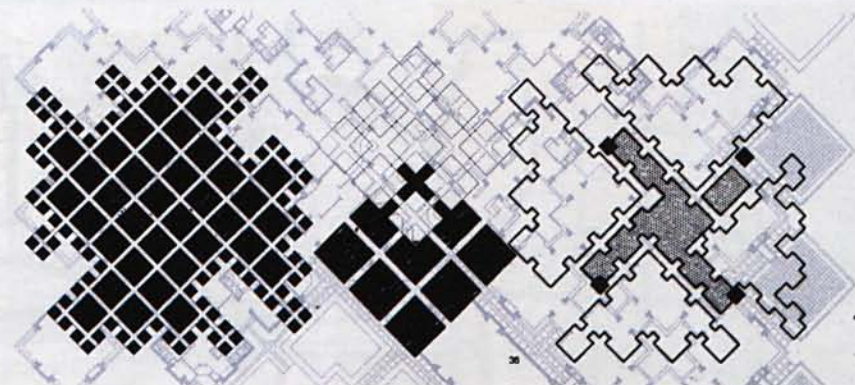
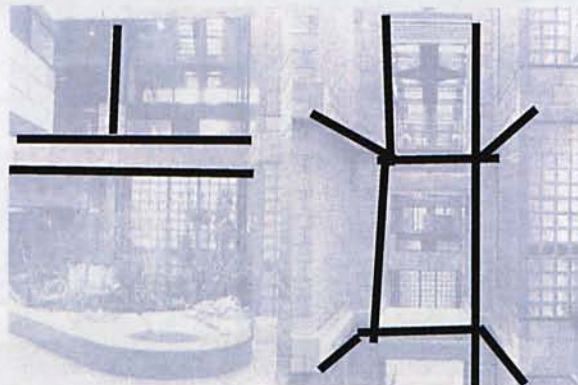
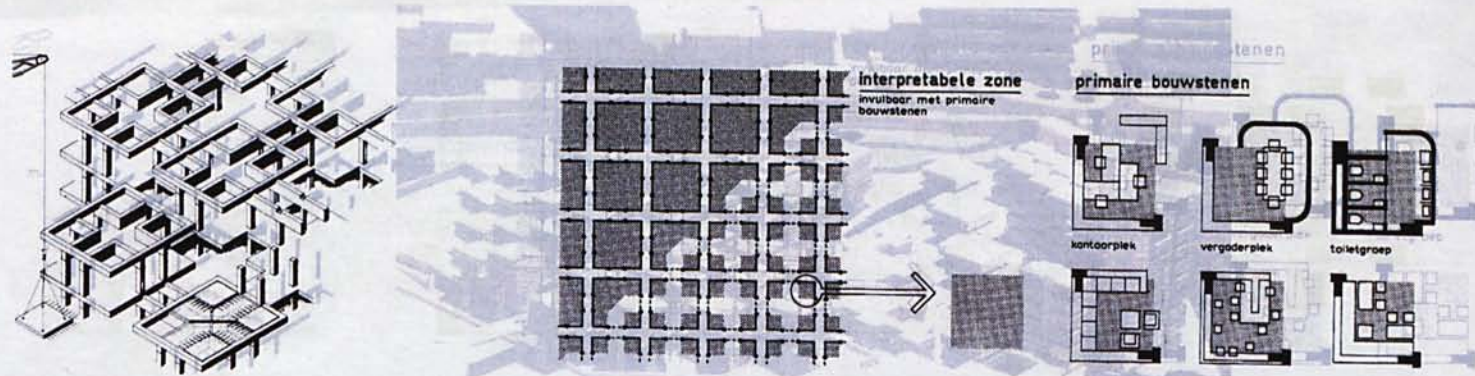
RICARDO BOFILL

Walden-7, Sant Just Desvern, Barcelona, Spain, 1970-1975

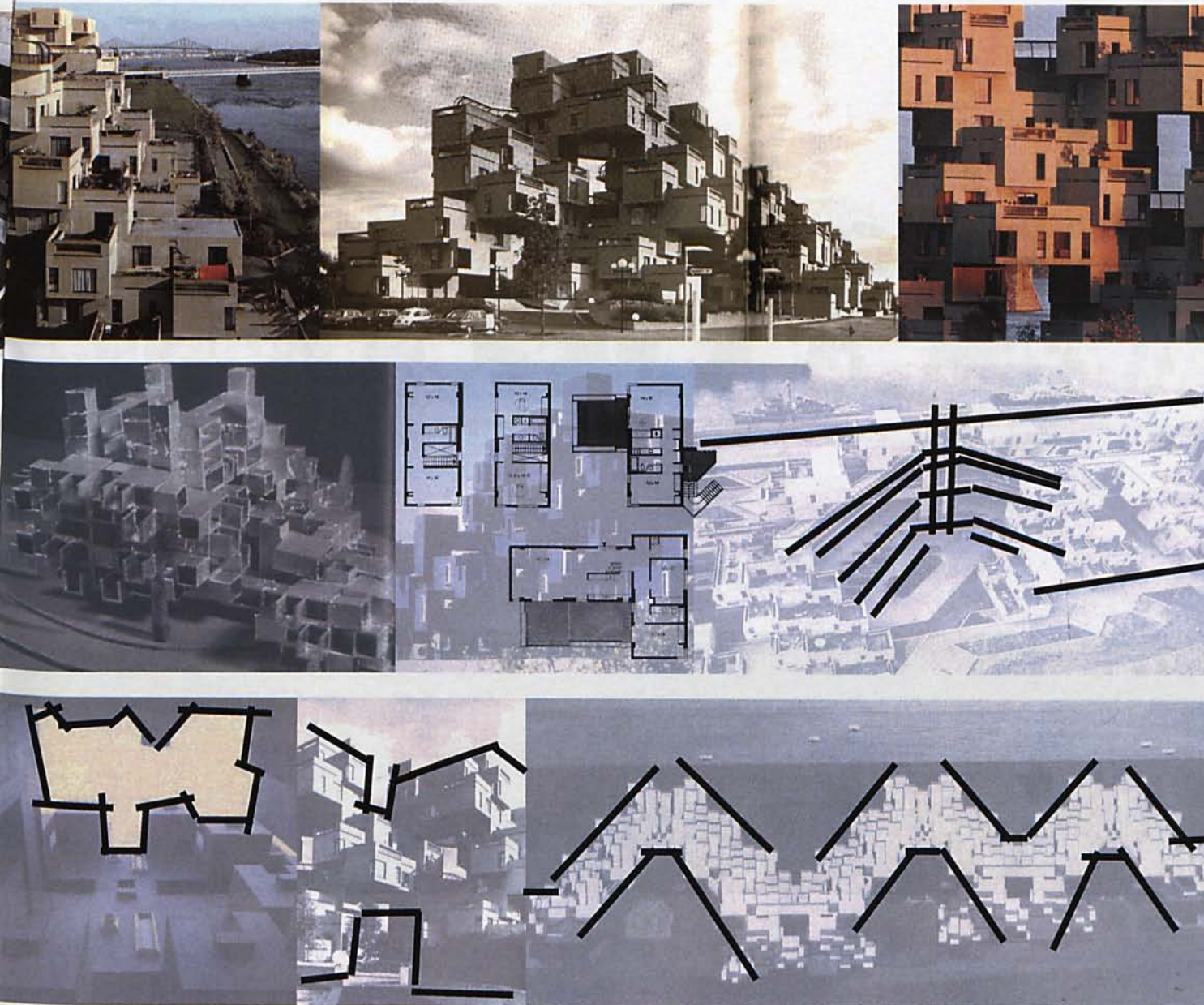


Herman Hertzberger

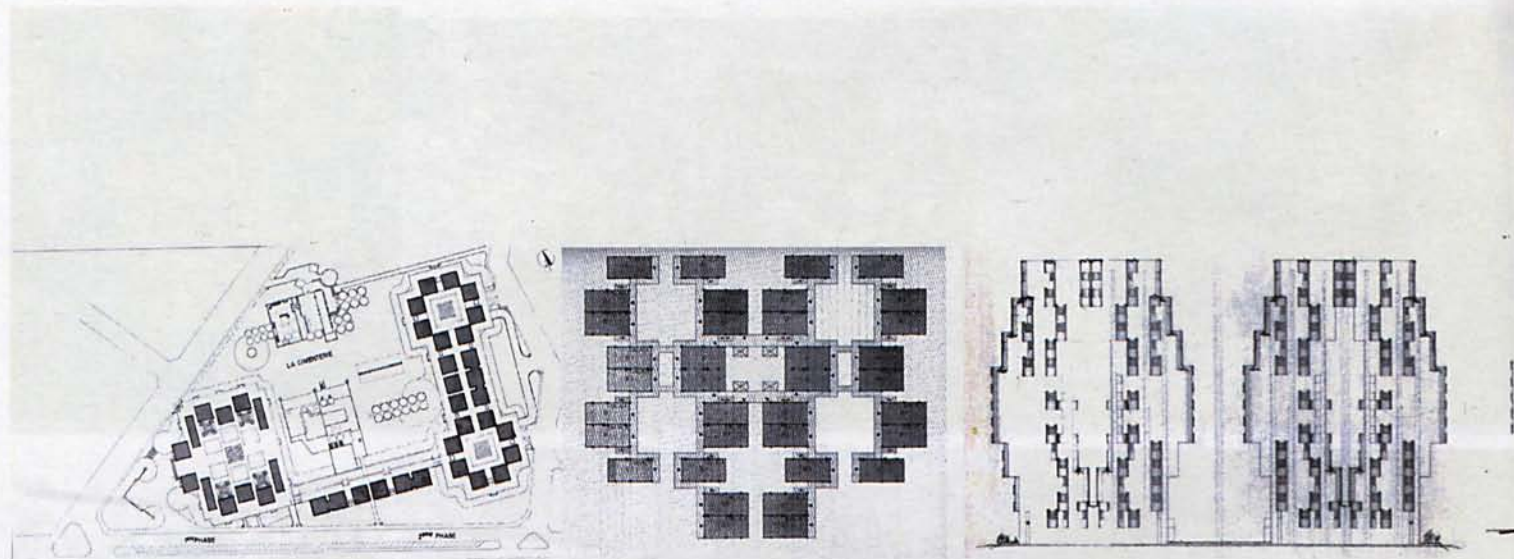
Central Beheer(a workplace for 1000 people),Apeldoorn,1968-1972



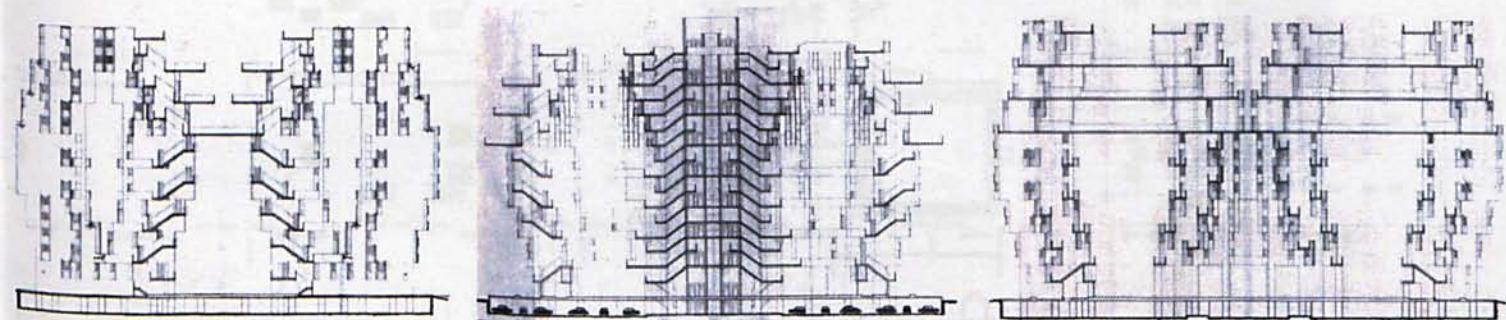
Moshe Safdie
Habitat 67, Montreal, 1967



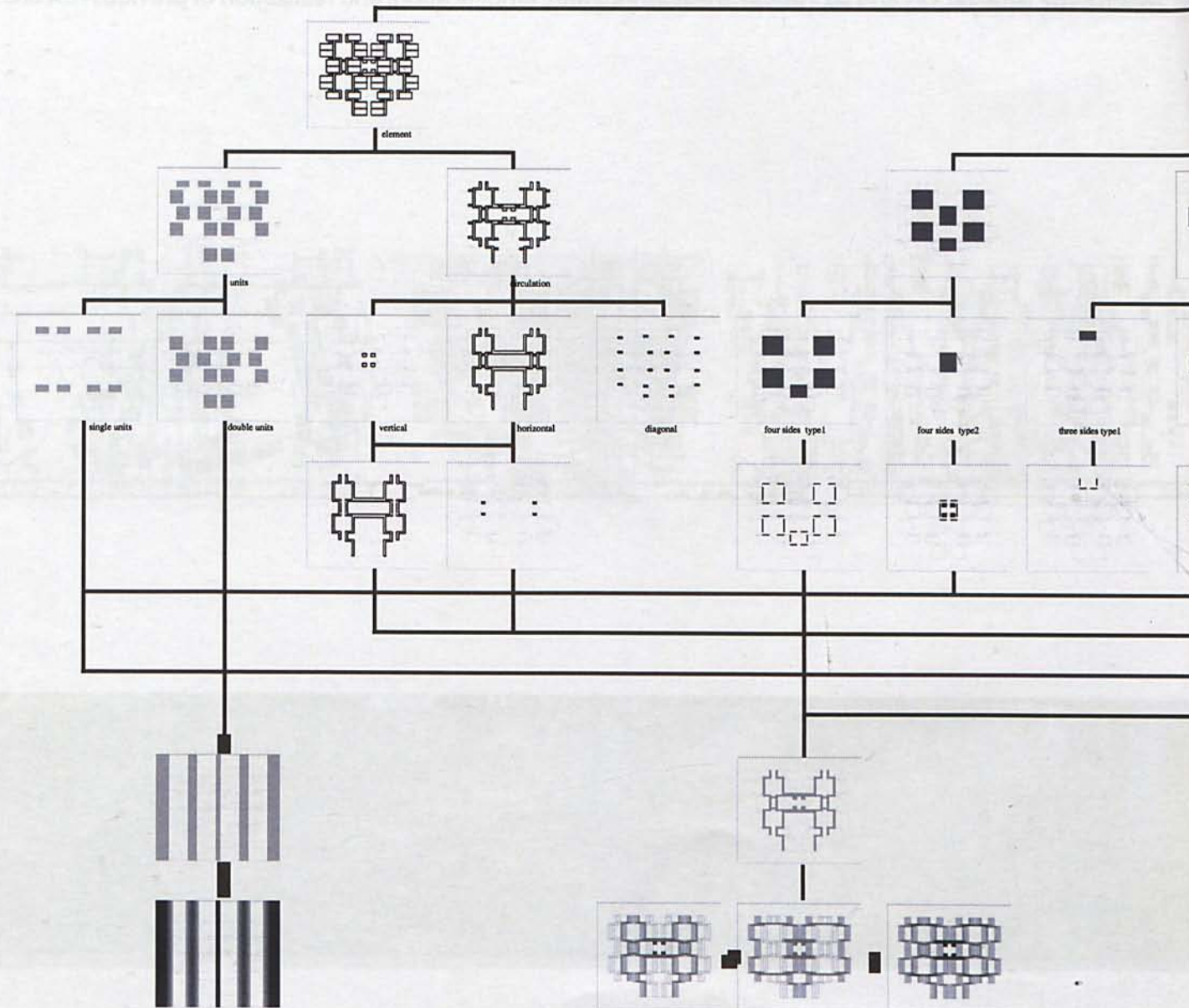
RICARDO BOFILL
Sant Just Desvern, Barcelona, Spain, 1970-1975



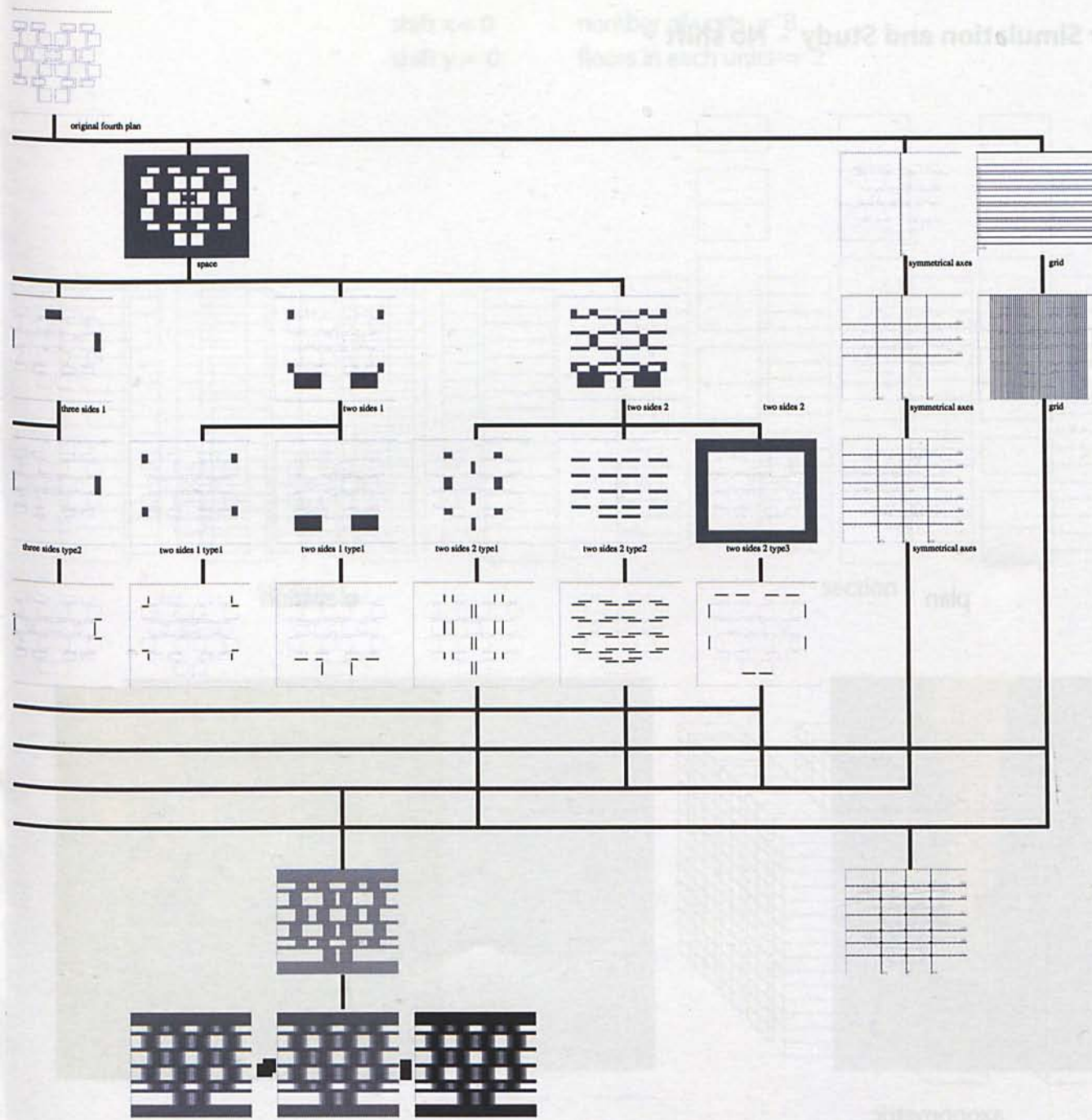
Walden-7 implements an old ambition of the thought in "The City in Space". It uses lots of different small units to form the large blocks and represents the continuation, amplification, and realization of previous research.



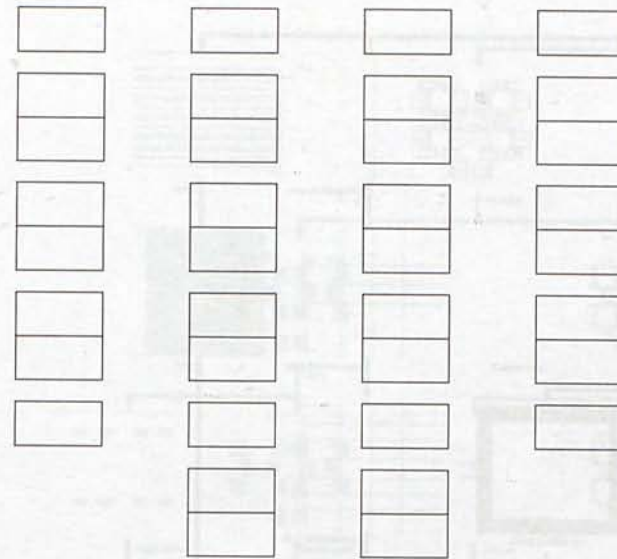
Analysis of the 4th floor plan of Walden 7



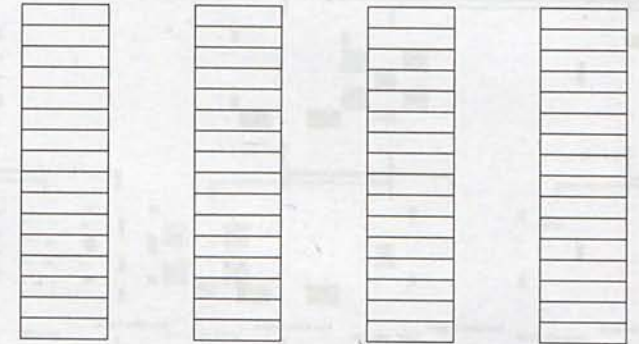
Through the analyse and reconstruct the model , I found the principle is:



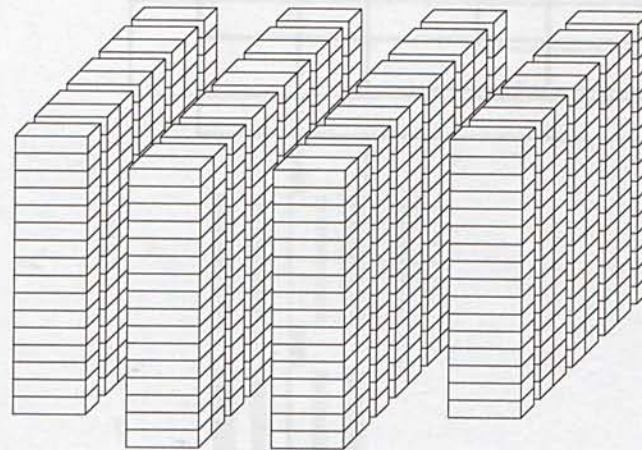
Computer Simulation and Study - No shift



plan



elevation

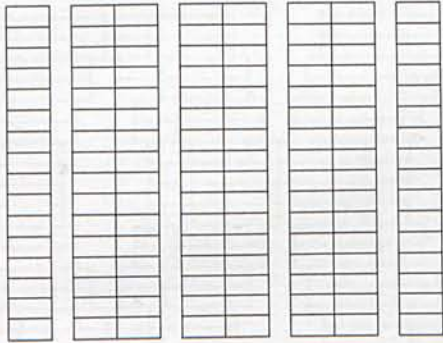


axonometric

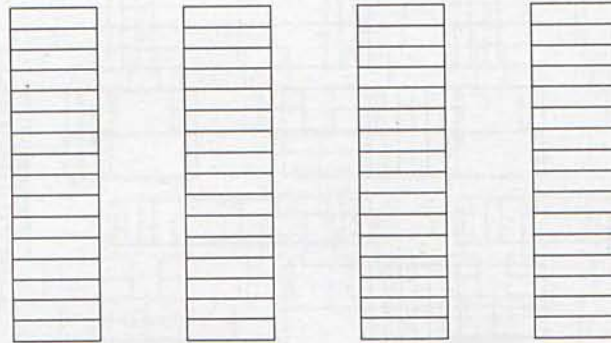


shift $x = 0$
shift $y = 0$

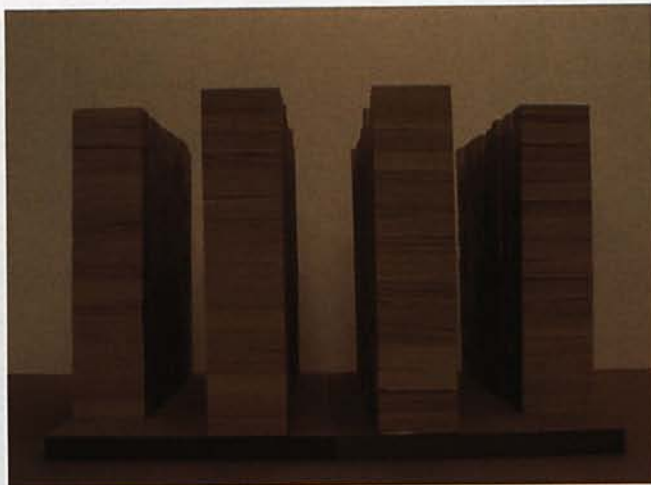
number of units = 8
floors in each units = 2



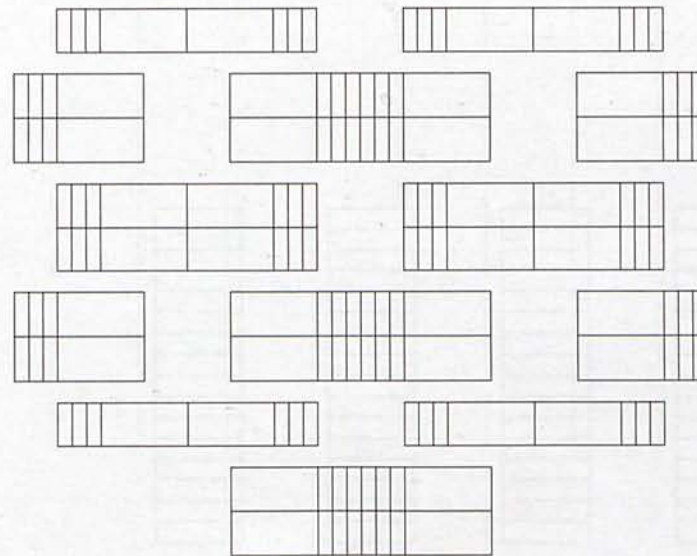
section I



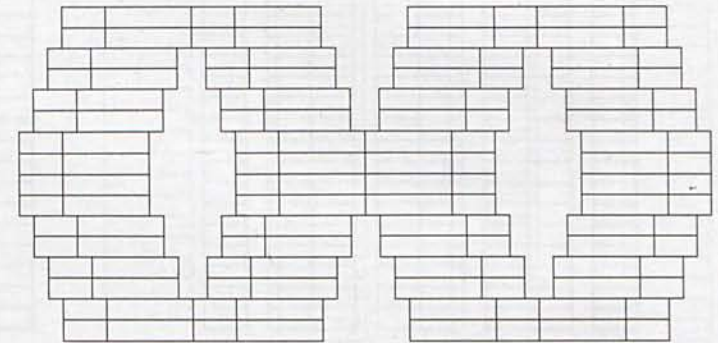
section II



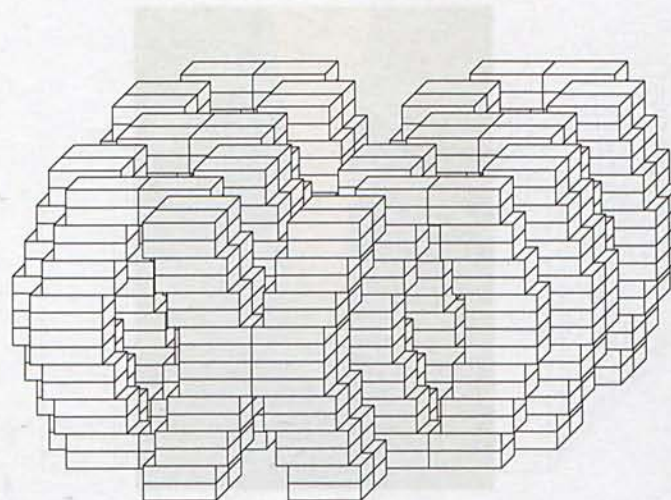
Computer Simulation and Study - Walden 7



plan



elevation

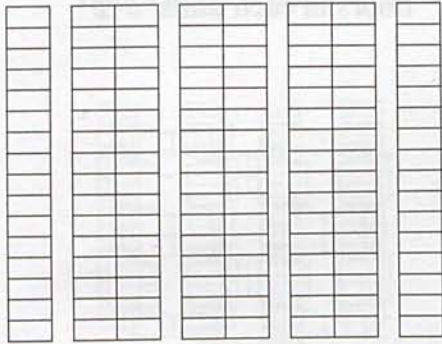


axonometric

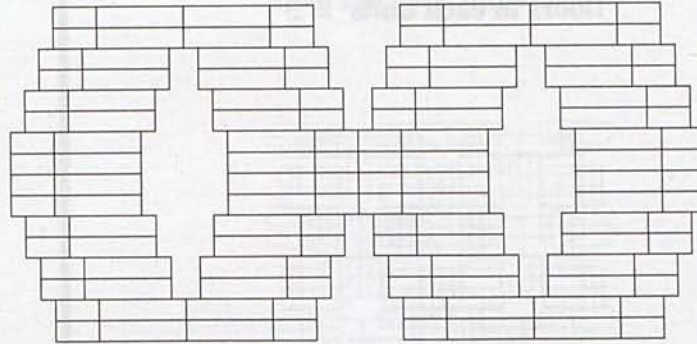


shift x = 700
shift y = 0

number of units = 8
floors in each units = 2



section I



section II



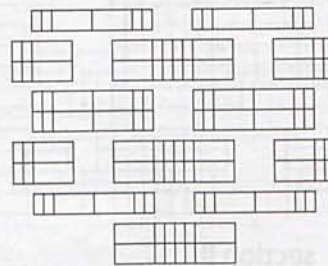
Computer Simulation and Study - Development

shift x = 1050

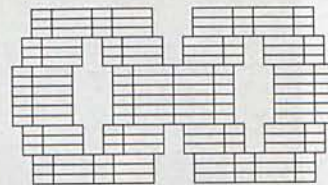
shift y = 0

number of units = 6

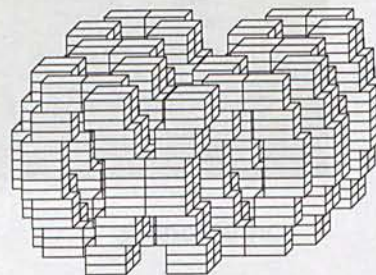
floors in each units = 3



plan



elevation



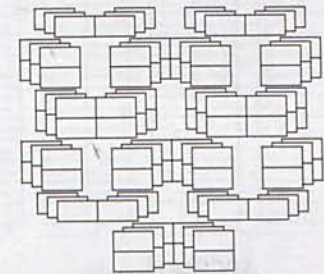
axonometric

shift x = 1050

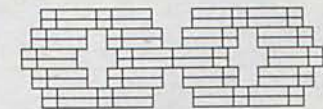
shift y = 400

number of units = 5

floors in each units = 2



plan



elevation



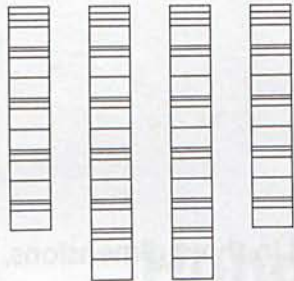
axonometric

shift x = 0

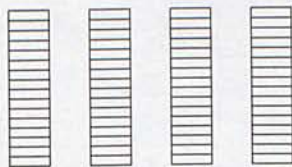
shift y = 700

number of units = 8

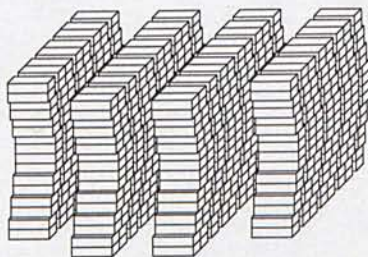
floors in each units = 2



plan



elevation



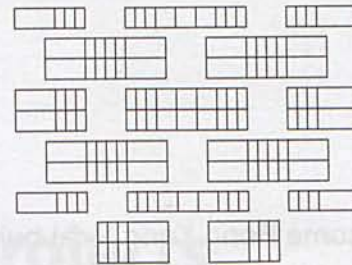
axonometric

shift x = - 1050

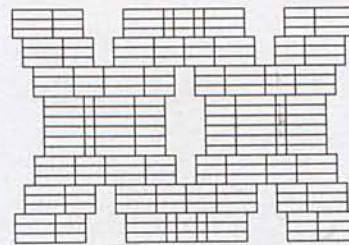
shift y = 0

number of units = 8

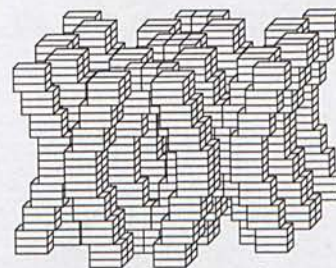
floors in each units = 3



plan



elevation



axonometric

shift x = 1000 - x slide

shift y = 0 - y slide

number of units in column

floor (row) in column

shift x = 1000 - x slide

shift y = 0 - y slide

number of units in column

floor (row) in column

I also choose some Hong Kong local buildings which are not developed in three dimensions, but have the similar characteristics in the spatial organization to study their relationship.

Hong Kong Local Projects



Clague Garden Estate



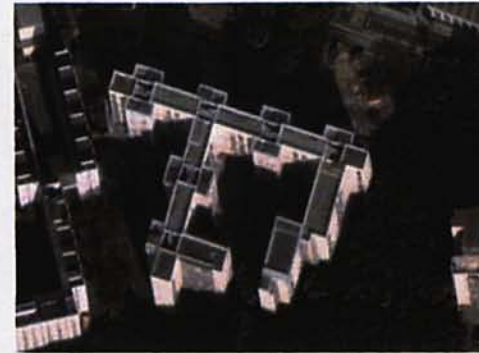
Kwai Shing West Estate



Chung King Mansion



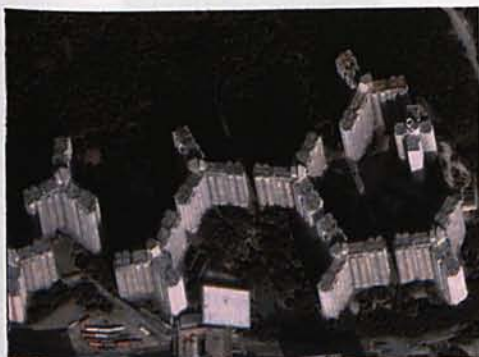
Lai Tak Tsuen



Healthy Village



Ping Shek Estate



Chuk Yuen North Estate



Hing Man Estate



Hing War Estate



Oceanic Mansion

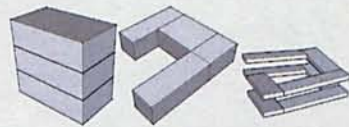
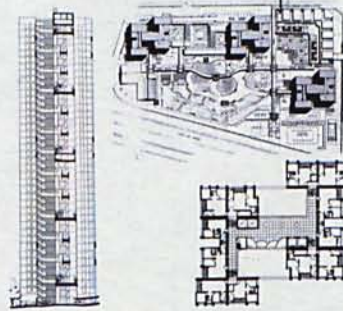


Sui Wo Court



Ming Wah Dai Ha

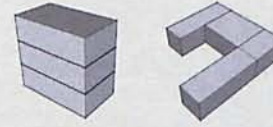
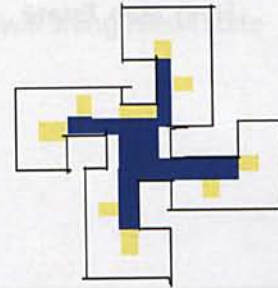
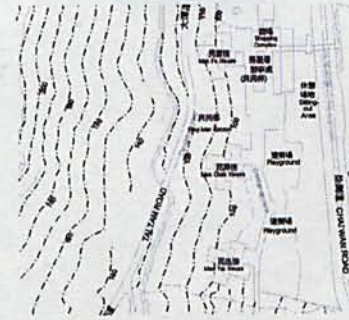
Clague Garden Estate



stack enclose continuous



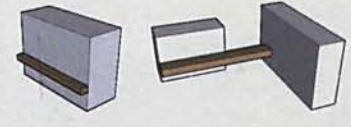
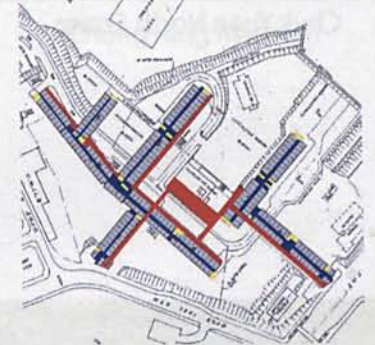
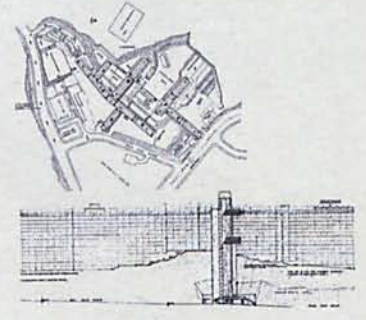
Hing Man Estate



stack enclose



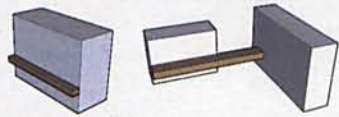
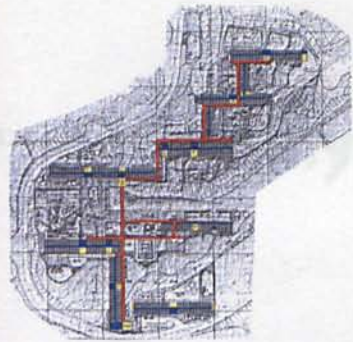
Hing War Estate



sky street extend



Kwai Shing West Estate

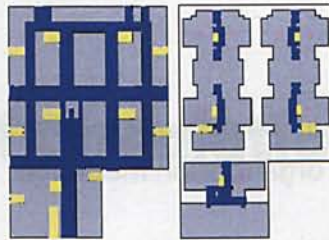
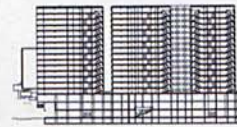


sky street

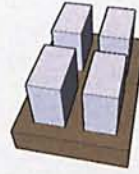
extend



Chung King Mansion



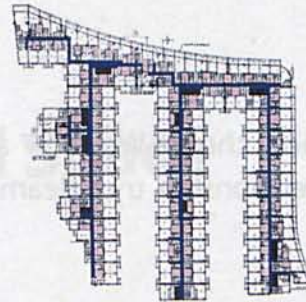
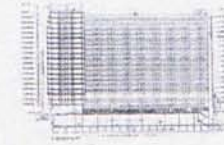
light well



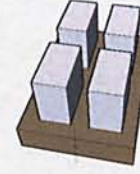
mass



Oceanic Mansion



light well



mass

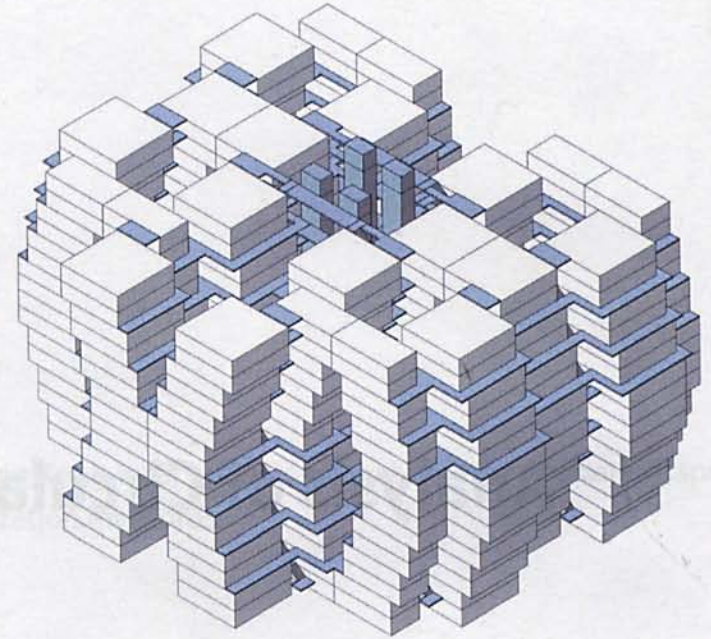


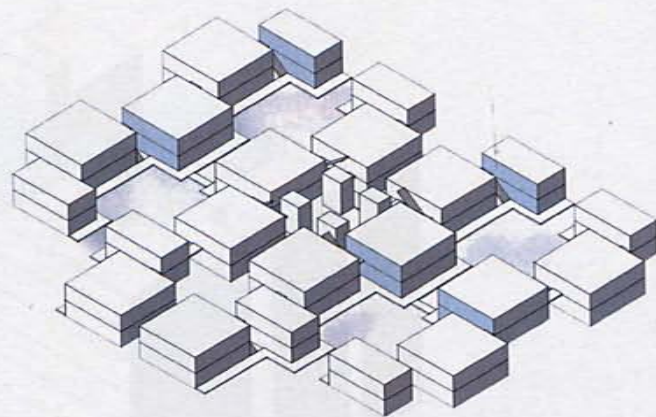
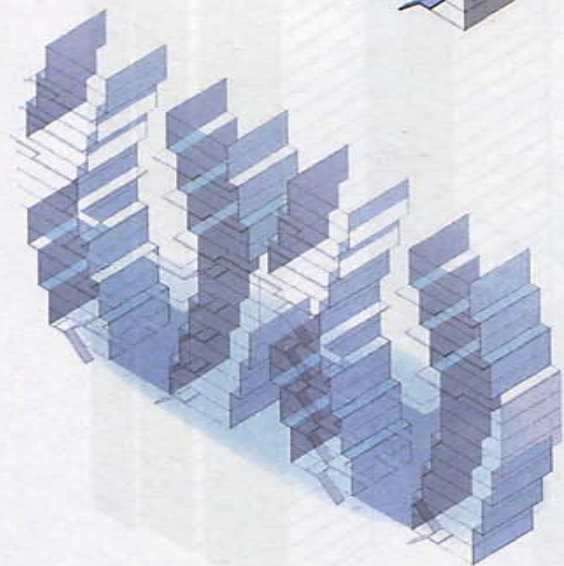
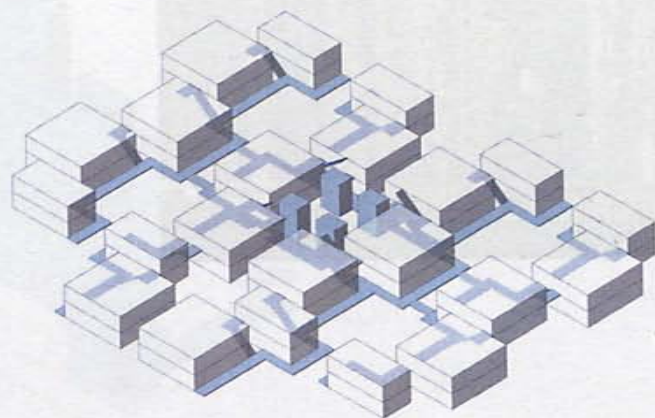
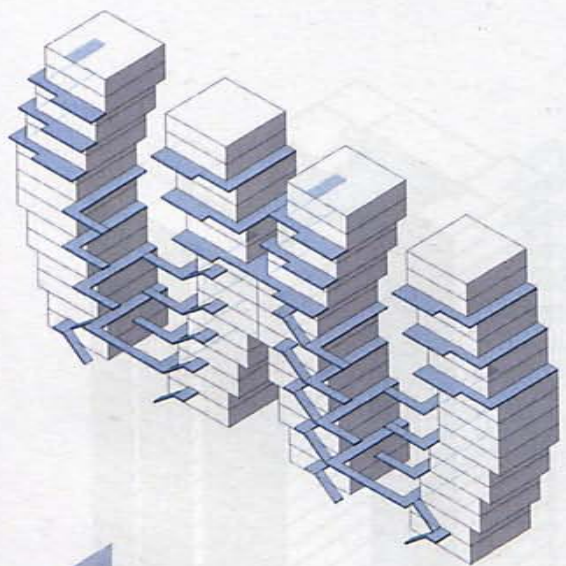
In this part, I choose Walden 7 and three other Hong Kong local projects to analyze their circulation, space and the relationship, try to learn their spatial organization methods.



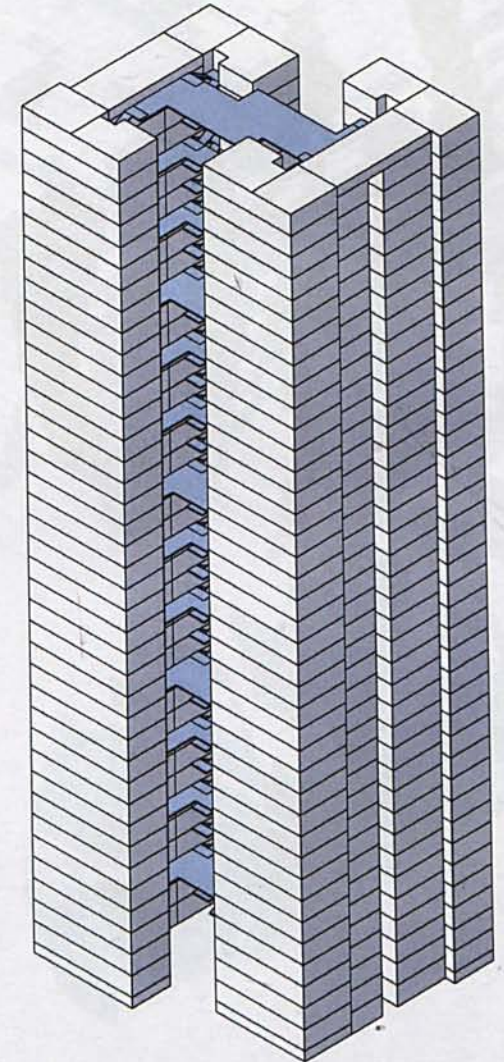
Analysis of Circulation and Space

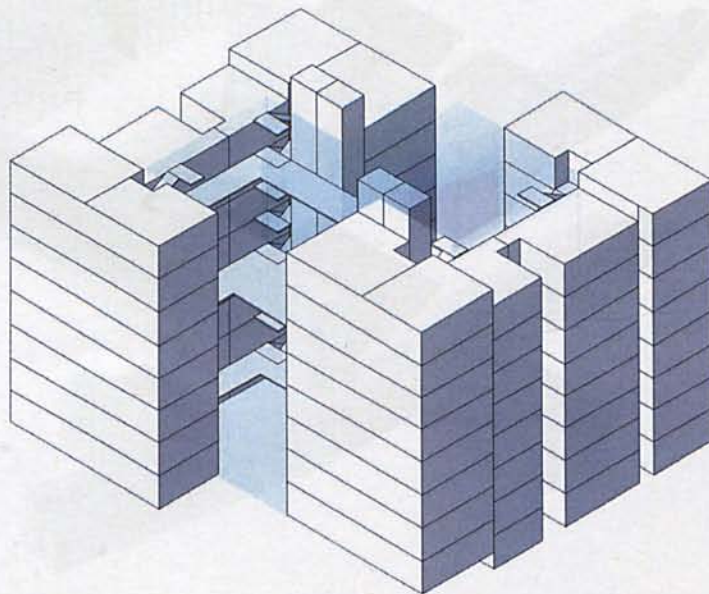
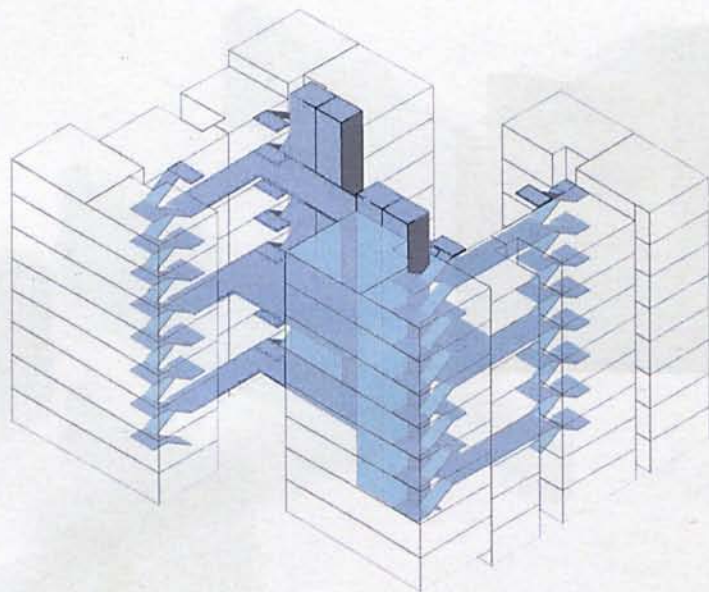
Walden 7



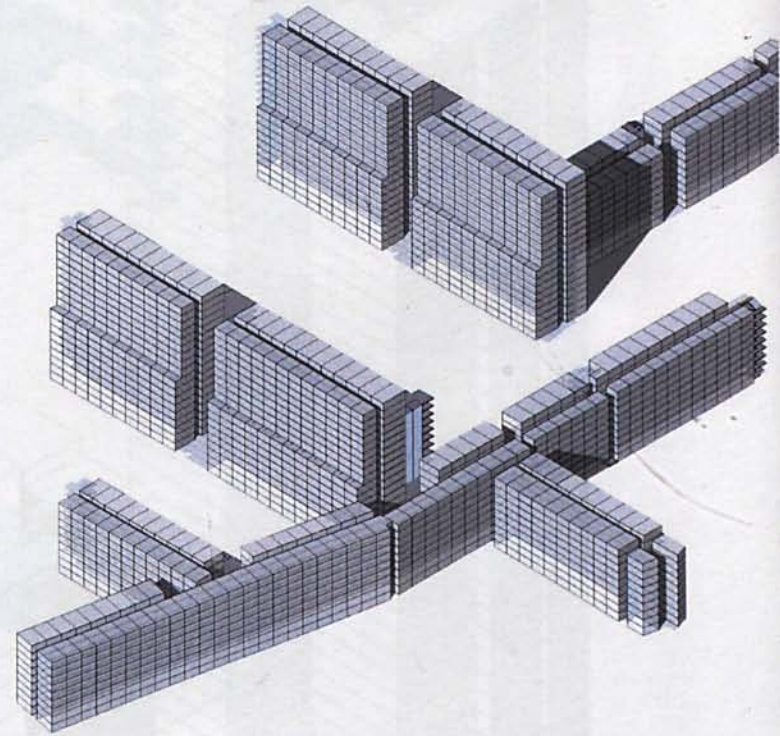


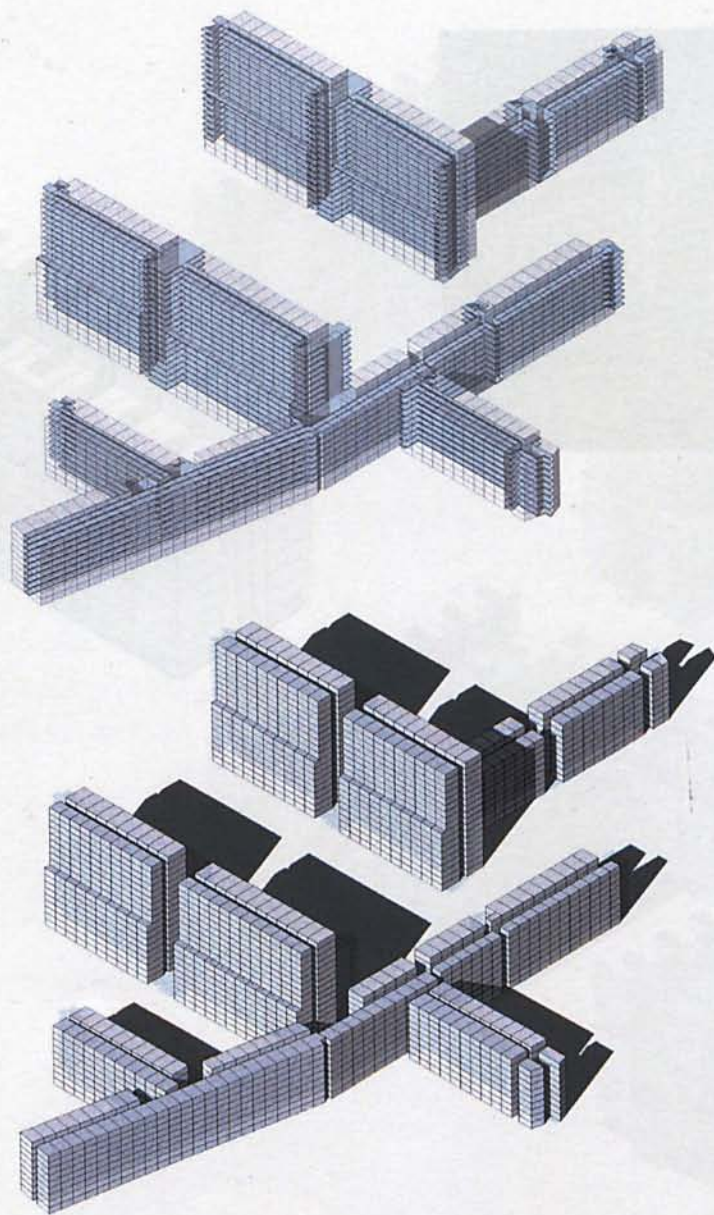
Clague Garden Estate



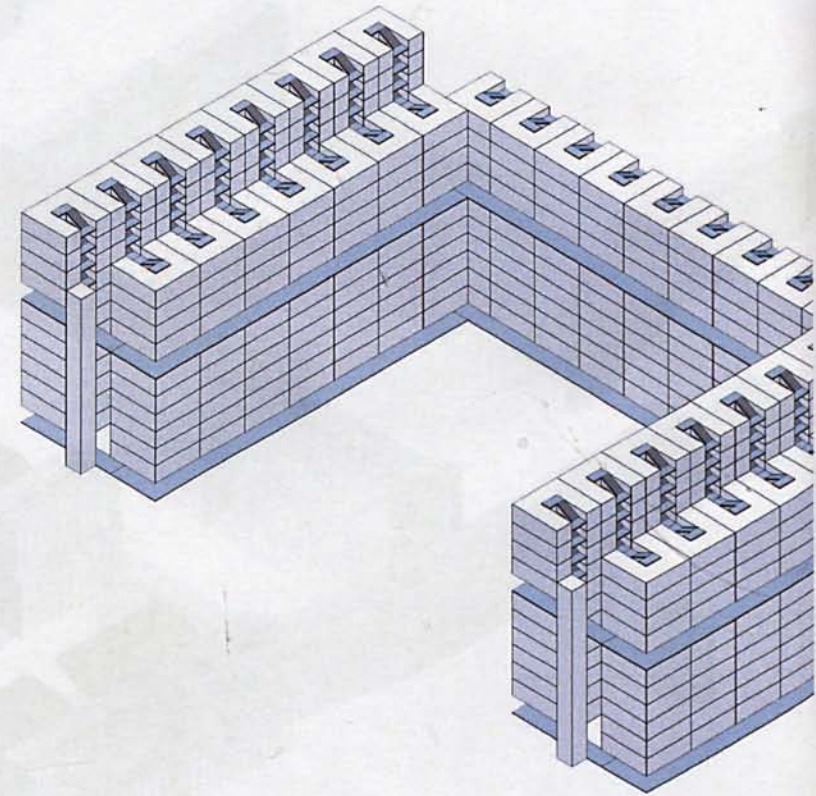


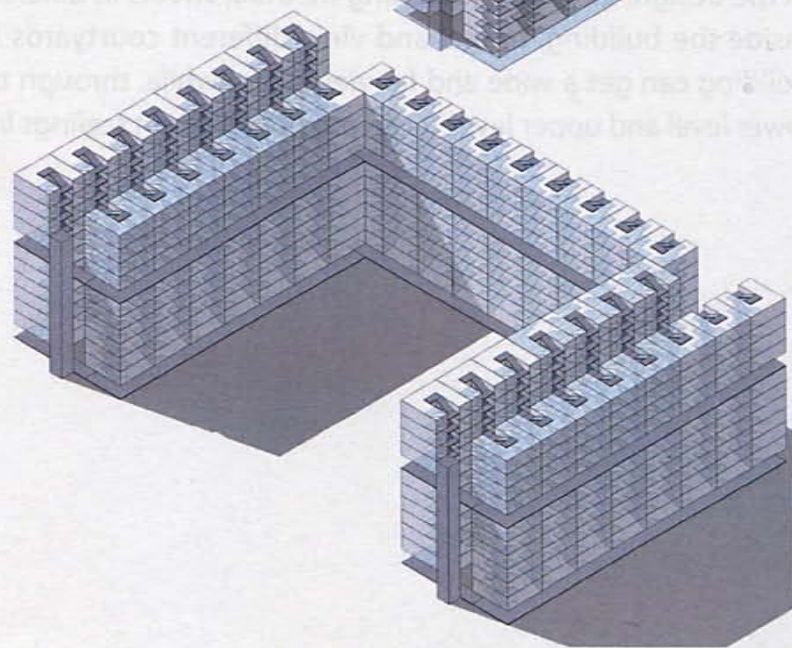
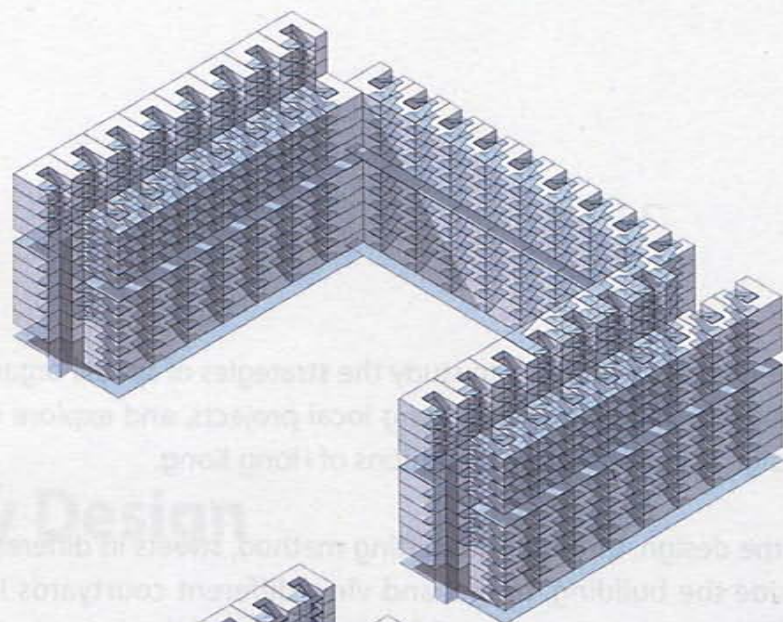
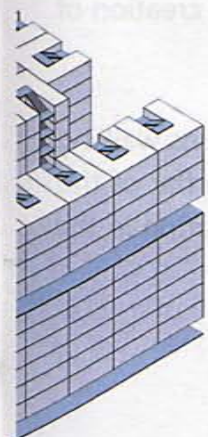
Hing War Estate





Police Housing





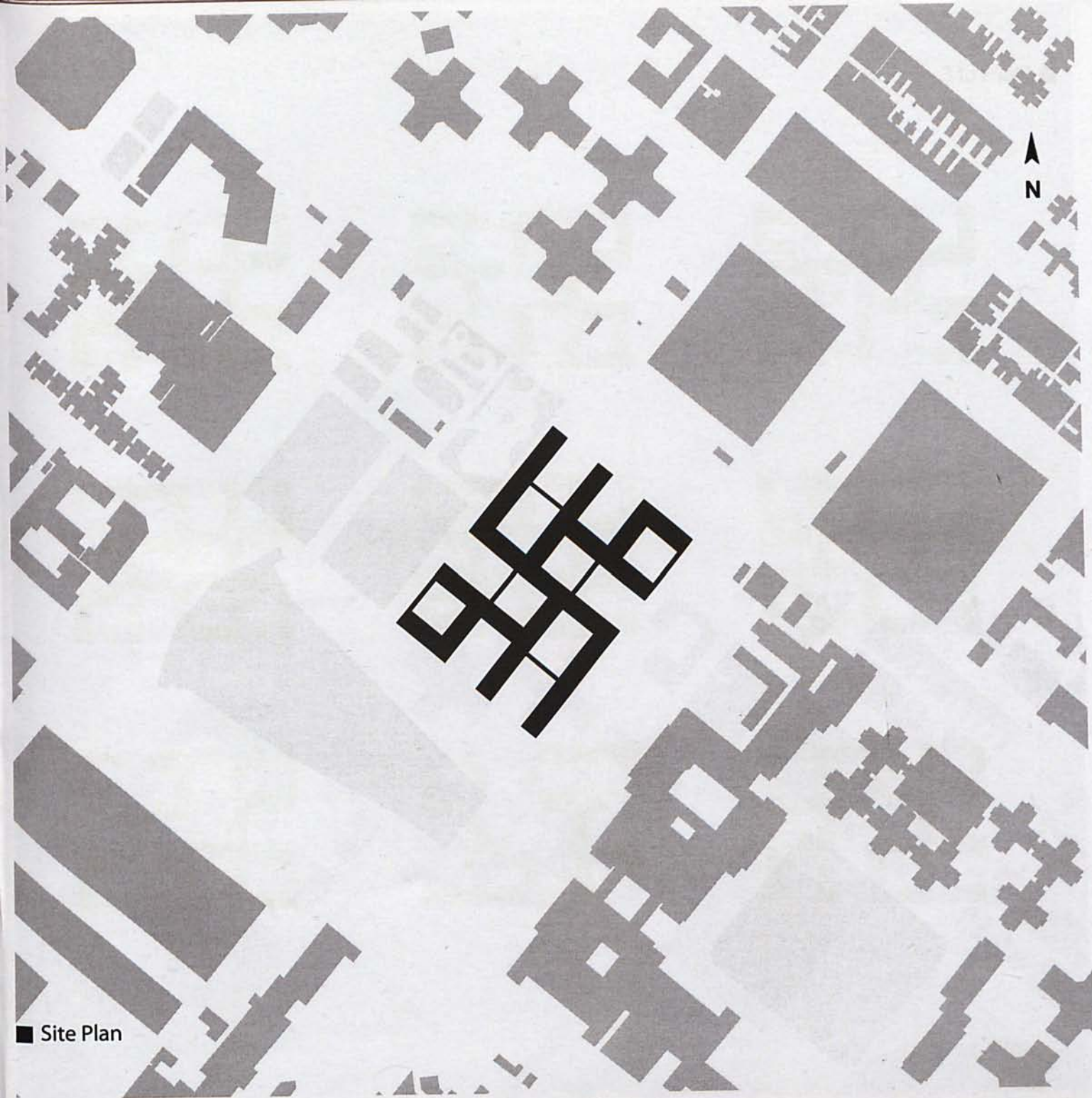
The goal of my thesis is to study the strategies of spatial organization through looking different architectural buildings and some Hong Kong local projects, and explore their potential to contribute to the creation of design in current urban conditions of Hong Kong.

In the design, through the shifting method, streets in different locations that can allow pedestrians walking inside the building, to feel and view different courtyards in single straight street. Also, each flat of the building can get a wide and far view. Meanwhile, through the test of arranging different circulation in the lower level and upper level, it can provide different feelings in the building.



My Design

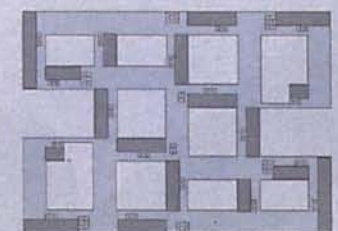
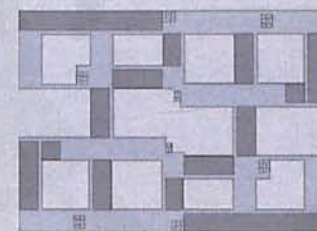
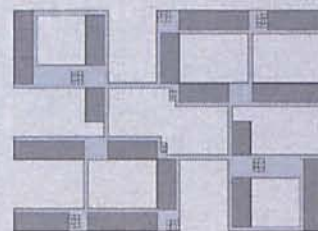
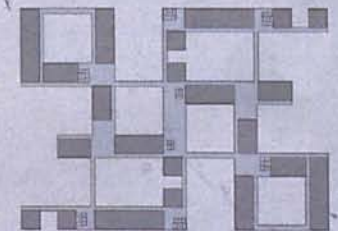
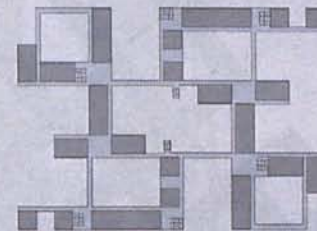
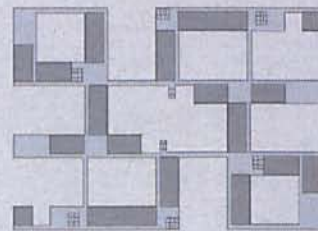
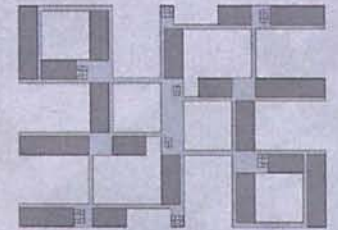
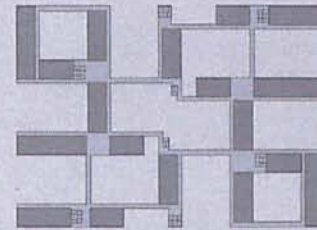
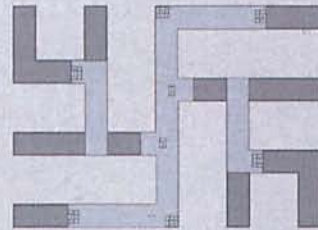


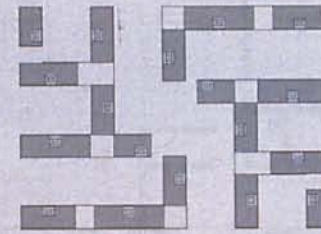
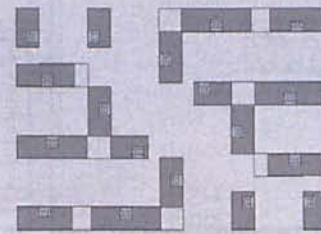
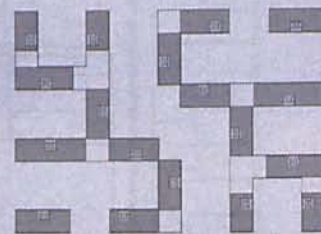
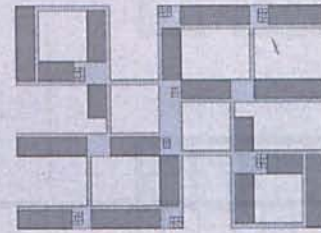
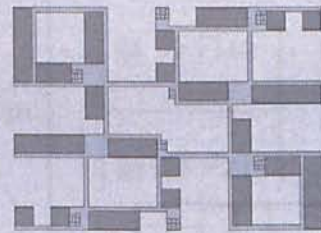
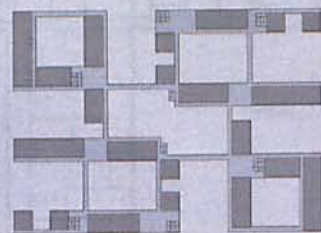
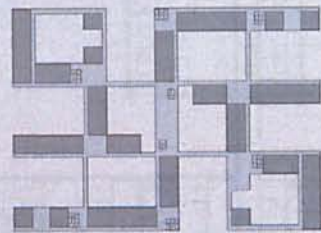
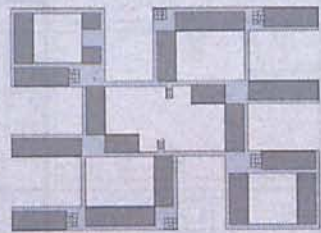
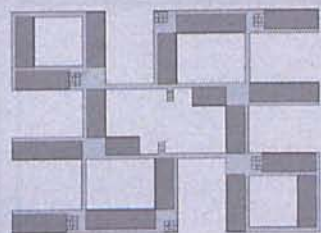


N

■ Site Plan

■ Plans of Each floor

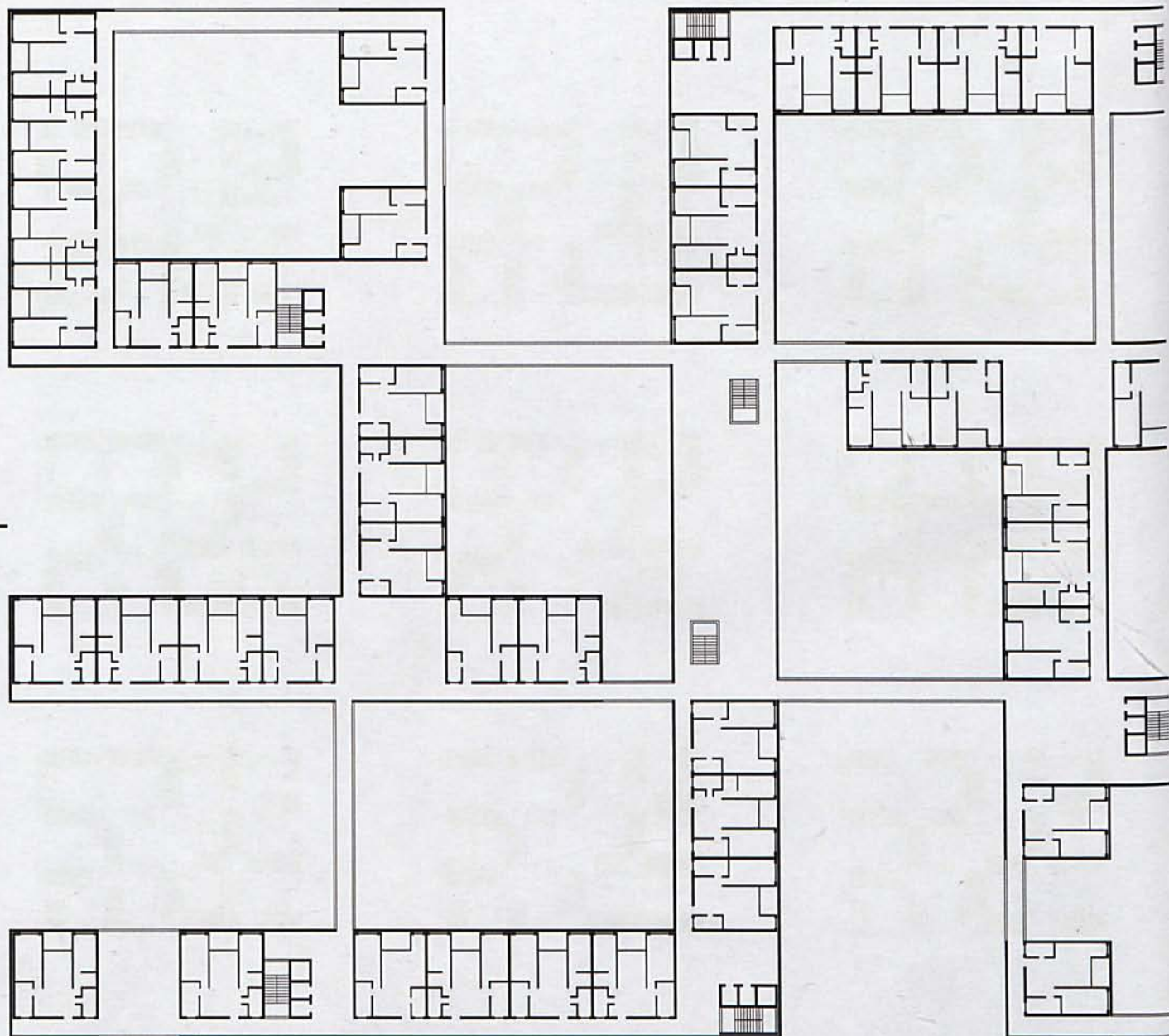


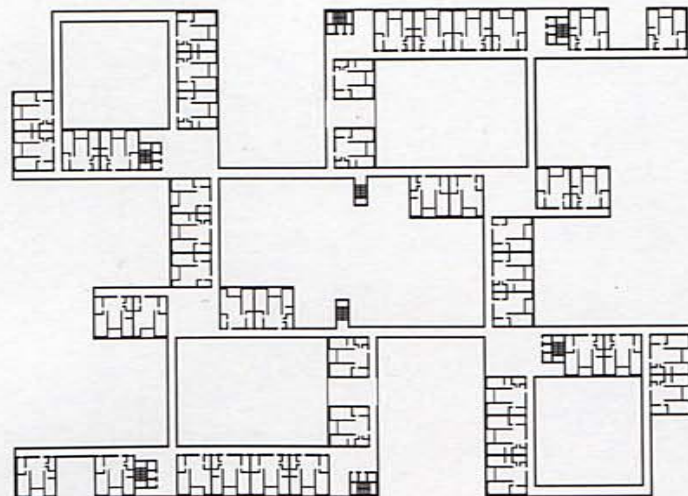
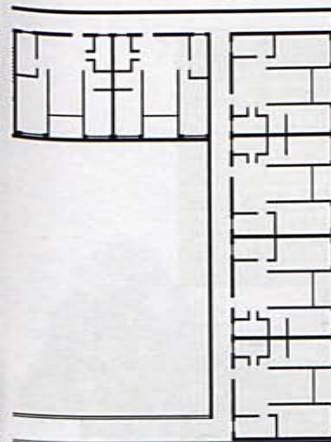
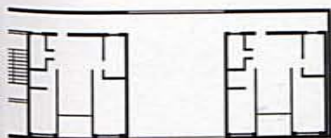


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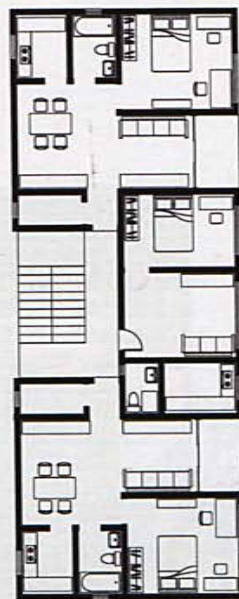
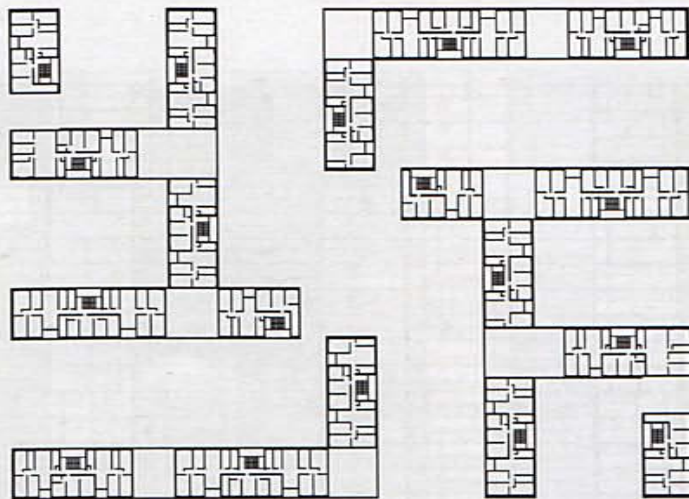
—A

■ 5F Plan

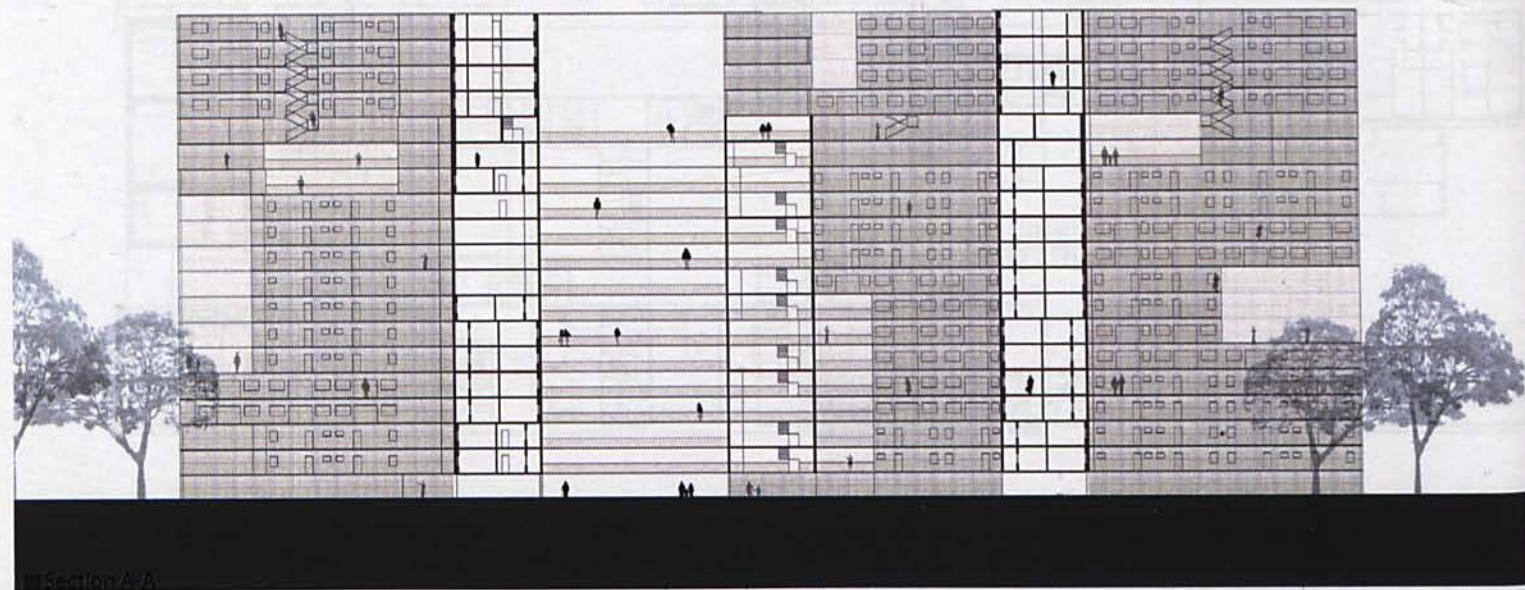
■ 7F Plan

■ 17F Plan

■ Flat Plan

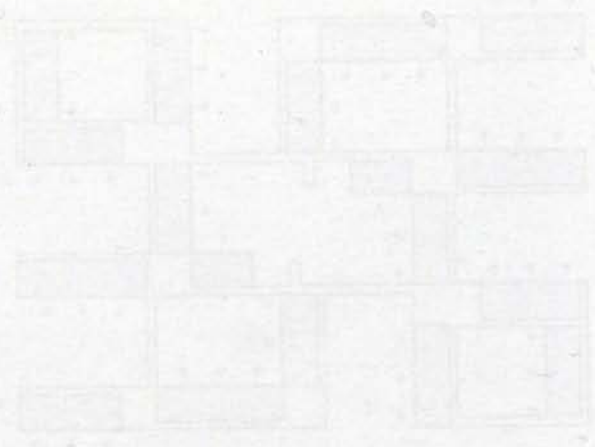


■ Elevation and Section



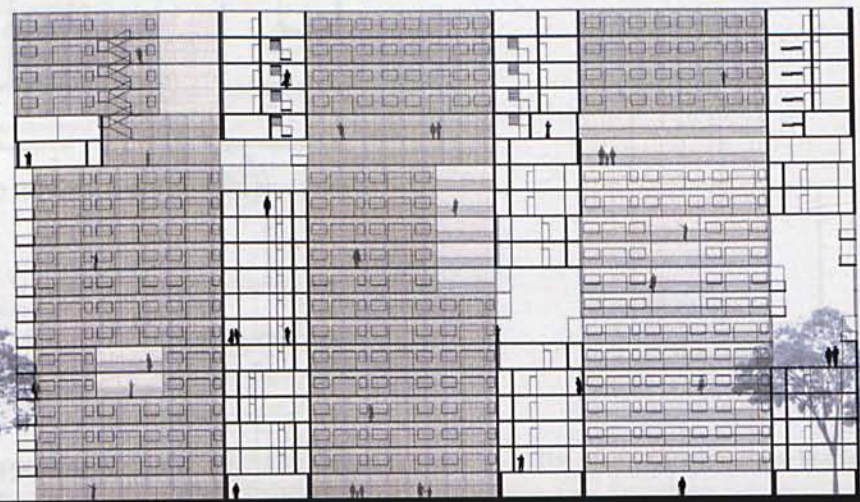


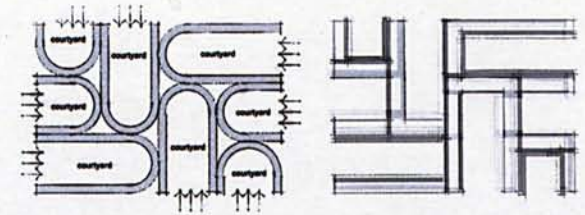
The plan shows the building's footprint and internal layout.



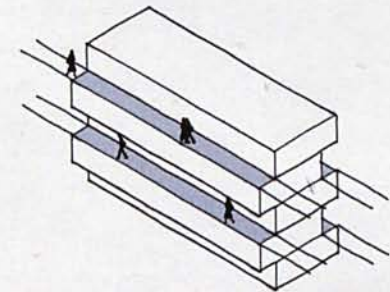
The plan shows the building's footprint and internal layout.

The plan shows the building's footprint and internal layout.



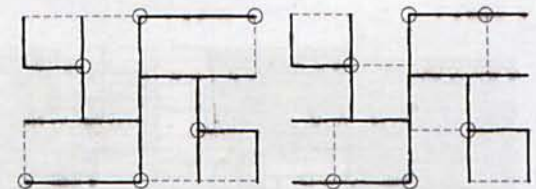


On each side, the outside space can flow into two different courtyards.

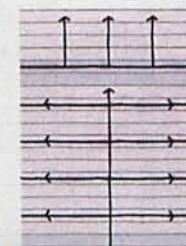


Flats—shift—Circulation

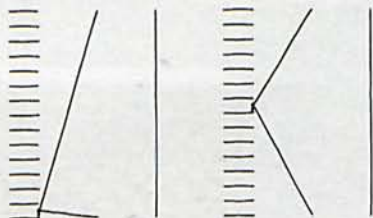
■ The Explanation of the Idea



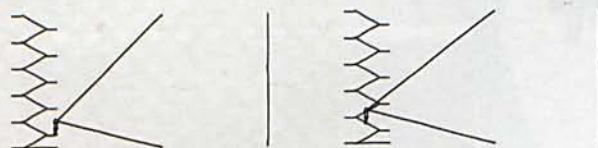
In this circulation method, each flat can easily be reached.



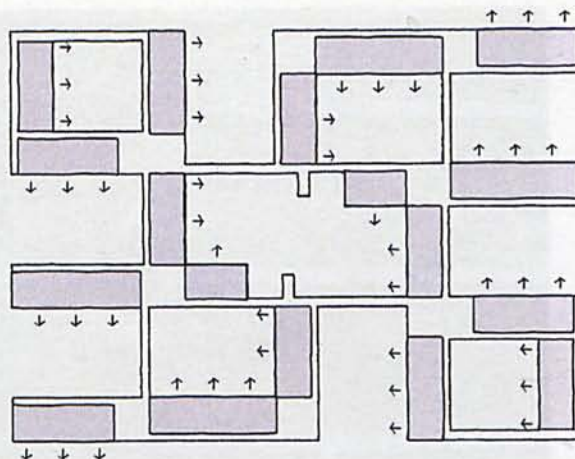
Different floor has different space and circulation.



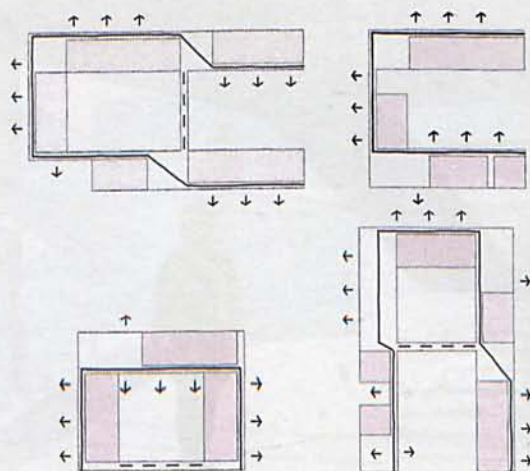
The space you can experience when you use the lift in this building.



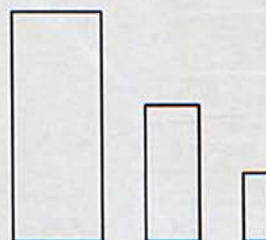
The space you can experience when you use the stairs in this building.



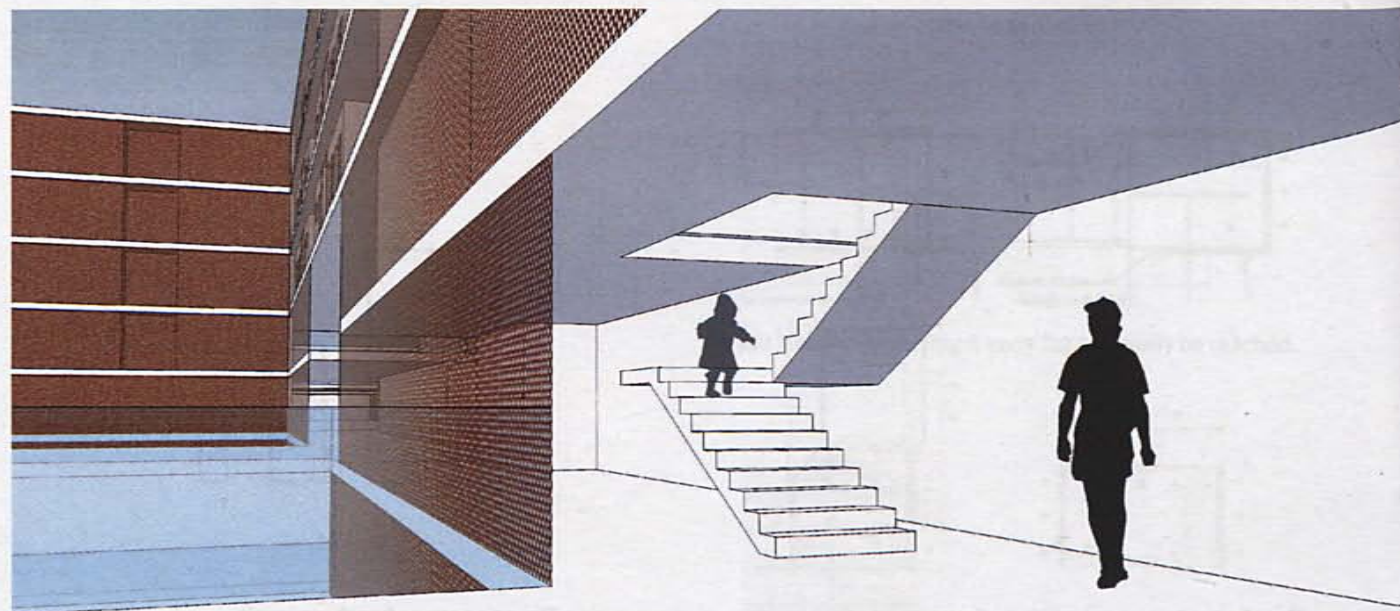
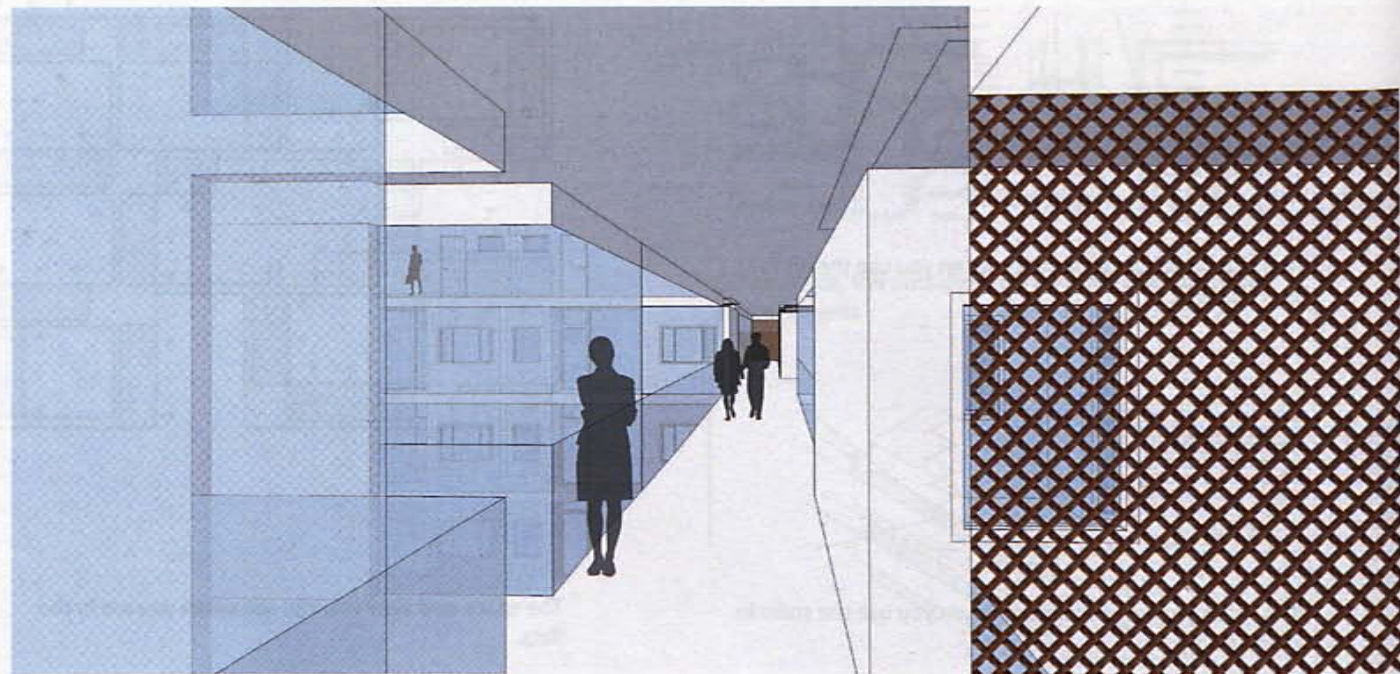
The space and view you can see when you are in the flats.

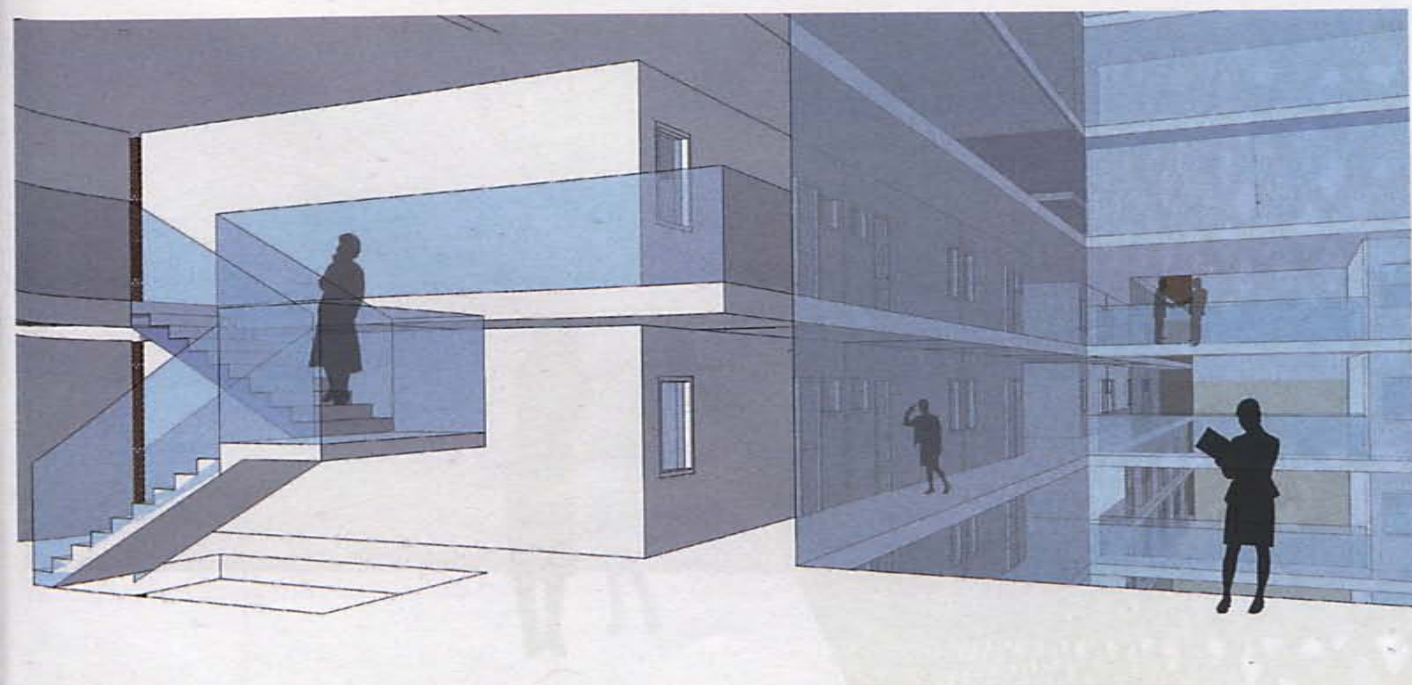


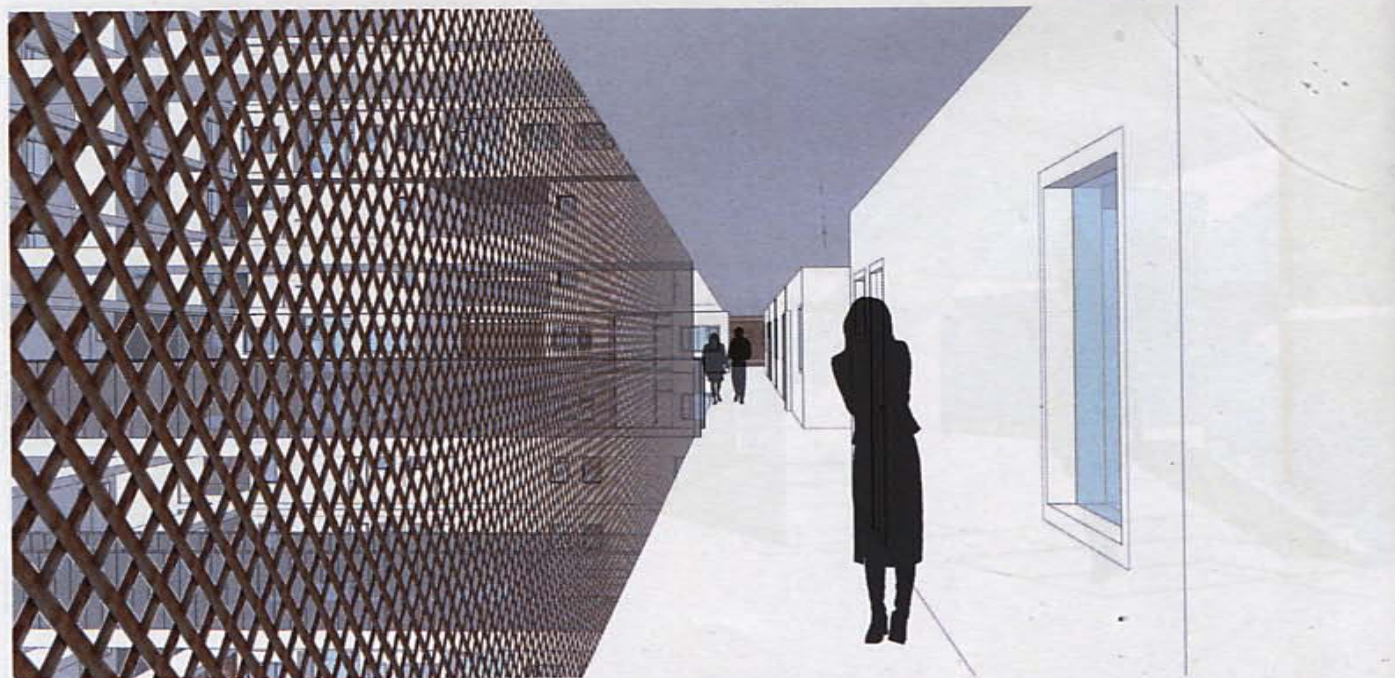
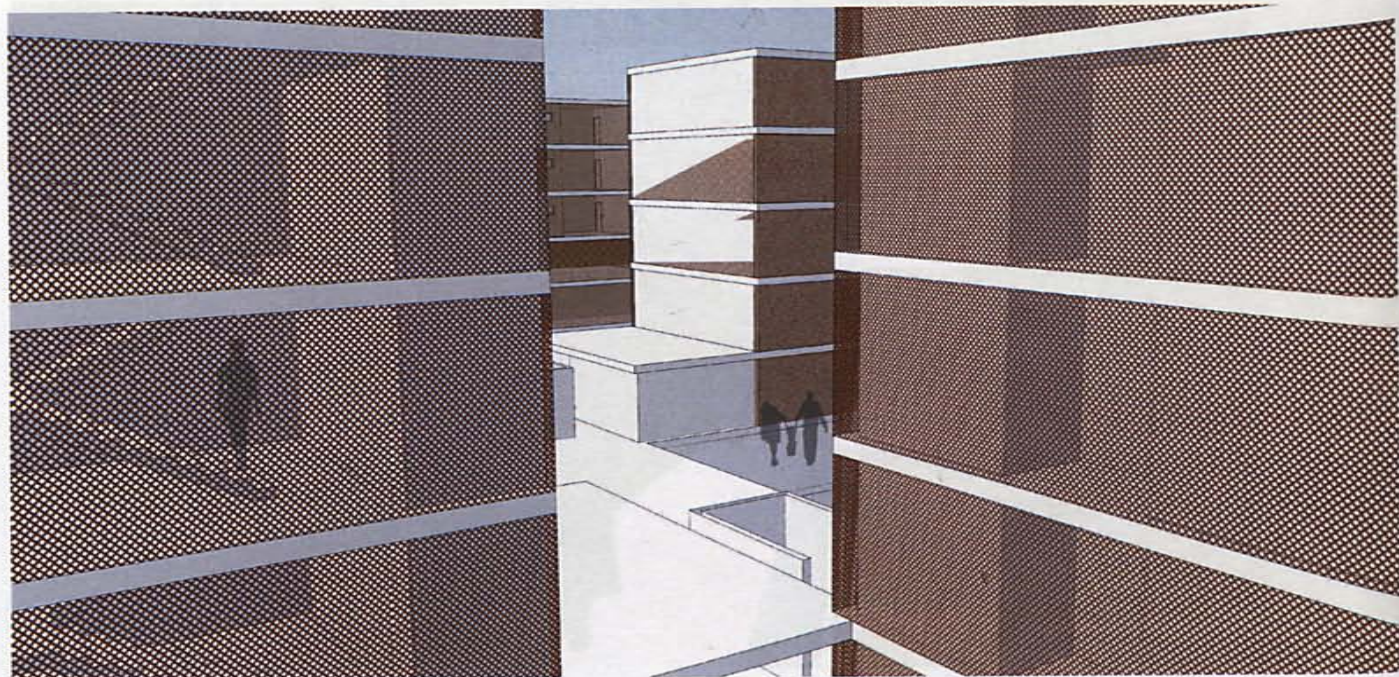
The space you can experience when you use the streets in this building.

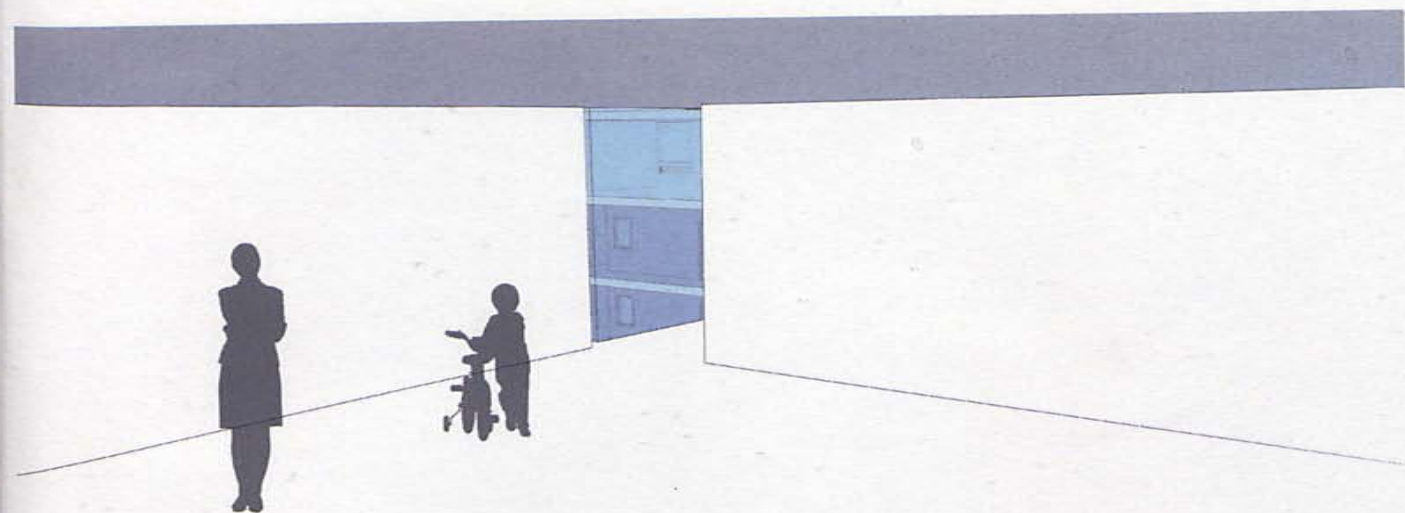


The open space has three levels .

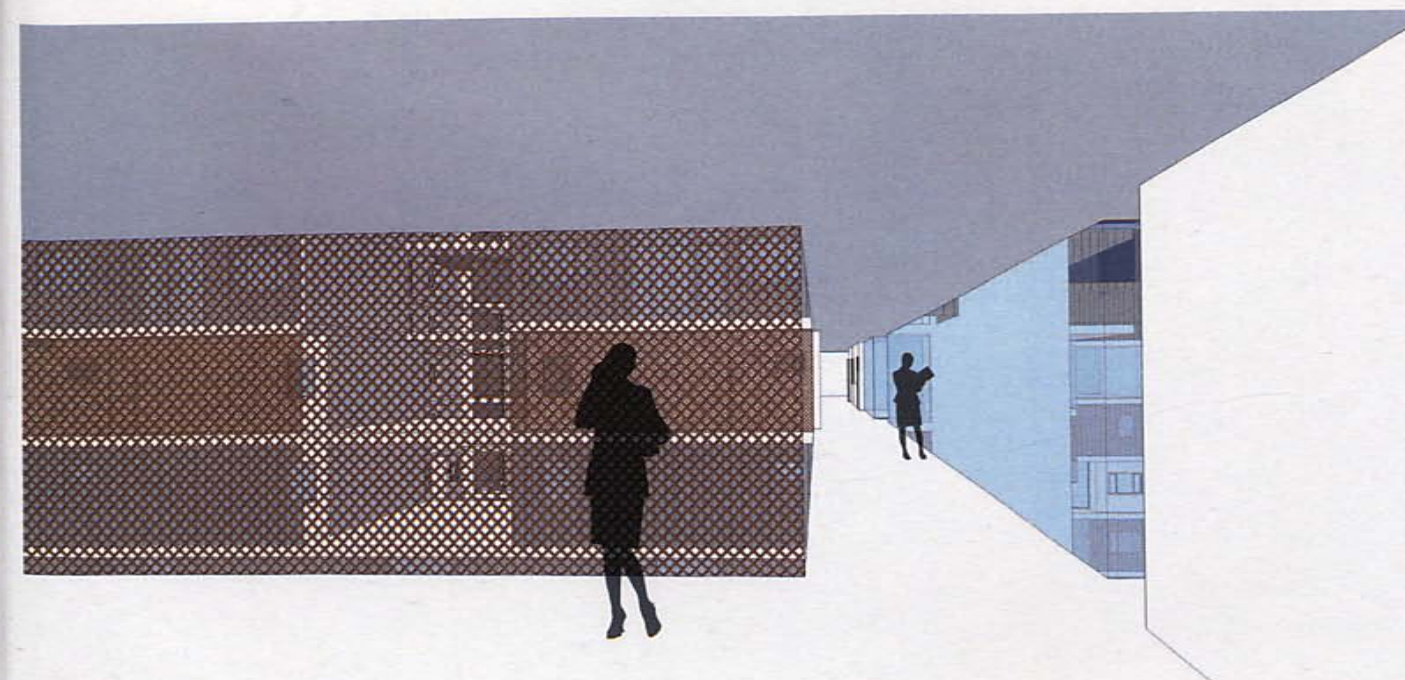








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